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A

PRACTICAL TREATISE

ON THE

DISEASES OF THE EYE;

BY

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TO THE RIGHT HONOURABLE

THE

EARL OF LAUDERDALE,

The following Treatise

IS,

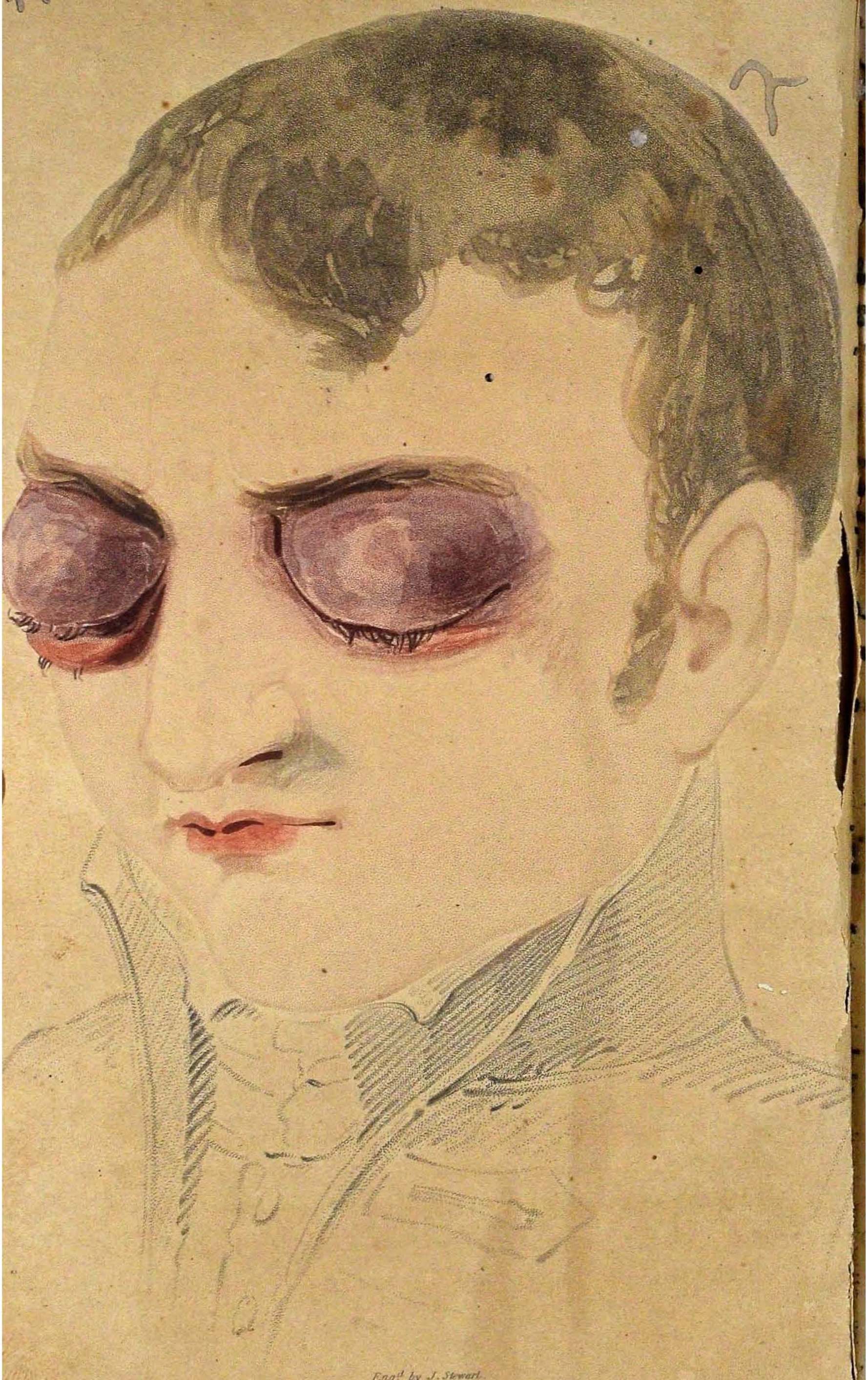
WITH HIS LORDSHIP'S PERMISSION,

RESPECTFULLY INSCRIBED,

BY HIS LORDSHIP'S

Ever grateful, and most obedient humble servant,

JOHN VETCH.



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PREFACE.

THE subdivision of manual labour manifestly tends to perfect the operations of art; but to limit the sphere of Science by the detachment of its parts, is to destroy the foundation upon which it rests. With respect to that of Medicine, however beneficially we may observe the labours of individuals to be occasionally exerted in the selection of particular branches, as the more exclusive objects of their study and attention, yet this can only occur to those who have first investigated this science as a whole; and we may be assured that others who assume a superior knowledge of any branch of medical practice, on the ground of a comparative ignorance of, or indifference to the rest, are but little indebted for whatever reputation they acquire, to the actual benefit they are able to effect.

From the time that the cure of external diseases became a separate object of pursuit, the science of Medicine at once fell from the eminent rank which it held in the scale of Philosophy. The early authors of the Greek school, the Romans and the Asiatic Arabians, who copied and extended the observations of the former, considered Ophthalmic Diseases as a constituent part of medical science, and the perfect accuracy and the minuteness of their descriptions testify their in-

timate knowledge of all that pertains to them. Celsus and Oribasius have recorded the names of authors who had acquired celebrity for their superior knowledge of Ophthalmic Diseases; but there is every reason to suppose that they had pursued the extended course of investigation common to the age in which they flourished; nor indeed is it likely that Celsus, who had embraced the whole system of philosophy then extant, would have quoted with deference the opinions of persons who limited the sphere of their knowledge to any single branch.

As far as concerned the application of pigments, the obliteration or concealment of blemishes, and perhaps even the operation for cataract, which to this day is the inheritance of certain families in the Indian Peninsula, the art of an Oculist may be said to have existed at an early period of the Roman Empire.

It was not however until the final erection of Surgery into a separate department, that we find diseases of the eyes selected as a separate and distinct branch of medical attention; this appears to have commenced under the Arabians of Spain, and from that period we may observe the declining state of medical science, both as regarding these and other diseases. The knowledge of diseased appearances, and minute attention to their varying indications, which had been transmitted through successive ages of legitimate inquiry, now gave way to the multiplication of remedies, and the art of preparing them; whole treatises contain little else than a bare enumeration of the

virtues attributed to them, as those of Jesu Hali and Camansuali; verifying the remark of Celsus, "quo minus facile discutitur malum eo plura "sunt tentata auxilia," forming a system much akin to that which teaches Surgery by exhibiting the various complexities of instruments, short and long, straight and curved, with springs and without springs, explaining their convexities and concavities; instead of directing the attention to the anatomy of the parts on which they are to be used; an adequate knowledge of which at once renders unnecessary the whole paraphernalia which the pupil has laboured to understand.

The apathy of the profession at large having suffered the knowledge of the ancients to continue in oblivion, with the few efforts on the part of professed oculists to replace it by any scientific acquisitions of their own, we need not much wonder that under their management diseases of the eyes are often protracted instead of being cured. In this country they have in a particular manner been overlooked; and the attempts to place the knowledge of Ophthalmic Diseases on an equal footing with the advanced progress of pathological science in general, may be regarded as the event of the passing day.

In Germany and in Italy, the study of these diseases has never ceased to form a constituent part of medical education; and we are indebted to these countries for a great share of the impulse now given to the subject here. Contingent circumstances have aided the interest which has been excited by the investigations of the late Mr. Saunders, whose efforts

must be considered as the source and basis of British Ophthalmology; in alluding however to the merit of priority, the honour is justly due to Mr. Wardrop, for having first applied the doctrine of modern pathology to the diseases of the eye.

The following observations, where I have not expressly acknowledged my obligations to the labours of others, have been exclusively derived from an attentive consideration of the phenomena of disease, without any reference to books, till long after they were arranged in their present order and classification. Although I have since discovered that they contain little that may not be found in other works, both ancient and modern; the partiality of my friends has considered that, even after the long delay that has occurred, they may yet serve some useful purpose, in assisting the progress of those beginning the study of this branch of the profession.

The Observations and Documents, intended to have been printed as an Appendix to this volume, are withheld, from a wish not to trespass on the attention of the reader with matter not essentially necessary.

7, *Regent Street, 28th Oct.* 1820.

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ERRATA.

Page	Line	For	Read
6	last	dele *it*	
21	12	blepharoblenorrhœa	blephoroblenorrhœa
25	15	apostemasation	apostemation.
31	last	referrable	referrible.
32	12	dele *are* before remedies, and insert it after *both*.	
38	4 from bottom	dele *that*.	
55	6 from bottom	insitu	in situ.
—	9	insert *the* before cornea.	
56	17	procedentia	procidentia.
67	6	insert *the* before vessels.	
73	4 from bottom	Qum	Quum.
132	6	rubifactions	rubefacients.
140	last but one	effected	affected.
145	5	immoveable	moveable.
—	2 from bottom	septemnasi	septum nasi.
146	8 from bottom	after affection insert ;	
158	11	insert *for* before " the medical."	
167	3 from bottom	hyemos	hyems
192	4	after " sympathy " dele ,	
196	18	mucous	mucus.
199	1	after " eye " insert " manifests itself."	
215	5	syncope	syncopen.
224	15	after " takes " insert " place."	
226	4 from bottom	by the same individual oculist	announced by the same authority,
228	6	muscles	muscle.
—	12 from bottom	paired	pared.
230	3 from bottom	palpebræ	palpebra.
231	13	ocular	oculos.

CHAP. I.

ON THE GENERAL CHARACTER AND TREATMENT OF OPHTHALMIC INFLAMMATION.

Assured that the practice which the following observations were originally intended to support, will no longer be opposed by the prejudices which formerly existed in this country, against the free and effectual use of depletion for the cure of inflammatory action, I may be permitted to affirm, that local inflammation, when it does not involve any of the parts immediately subservient to life, is a disease which we are able to command or subdue. Inflammation, more especially as it affects the eye, unaccompanied by constitutional disease, is always to be regarded as susceptible of being conducted to a successful termination, rendering avoidable all those evils which it would otherwise occasion, and which, in point of importance to individual welfare, are inferior to those only which alter or injure the functions essential to life itself.

But, farther, as we possess advantages in the treatment of this inflammation over that of every other part, both in the singular opportunities which it affords of observing the phenomena, and ascertaining the precise limits of the disease, as well as in the uniform nature of the changes incident to its several stages, a proportional degree of precision ought to be acquired in its management. As the means chiefly available for the cure of inflammatory action differ greatly in the relative force which they exert locally, and on the system at large, next to the actual cure of the disease, it is of importance to observe that the object be attained by the fittest method, and that the means which we employ do not exceed the exigency of the case.

In other instances of local inflammation, the actual severity of the disease must of itself decide the extent or force of the treatment; but here, besides the degree of violence, the particular character which it assumes, according to the variety of structure which it occupies, must form an object of prominent consideration. The importance, therefore, which attaches to the difference of practice to be observed, for the cure of the inflammation of parts so very contiguous as those of which we are about to treat, and the characteristics of which I was early led to appreciate, by the strict evidence of facts, induces me to enter into a gene-

ral view of ocular inflammation, believing as I do, that the principles I am led to offer in explanation of practical results, will afford the basis of a more simple classification, and present such therapeutical indications, as may prove no less conducive to the ease and decision of the practitioner, than to the security of the patient.

Inflammation in two very distinct parts, is indiscriminately blended in the present acceptation of the word Ophthalmia. This term was originally employed by Hippocrates, to express a catarrhal or purulent inflammation of the conjunctiva; αλλος ῥόος επ οφθαλμια, καὶ οἰδέοισιν αἱ οψεις. The different forms of which, as well as inflammation of the proper structure of the eye, came afterwards to be distinguished by the addition of specific or qualifying terms, to which the successive writers of the Greek, Roman, and Arabian schools implicitly adhered, and, probably, with an accurate perception of their meaning. They have long, however, ceased to convey any accurate or practical grounds of distinction, and there is an obvious necessity for a more definite use of the terms we employ.* Throughout the following observations, I shall therefore consider the word *Ophthalmia*, in its general sense, as applicable only to inflammation of the conjunctiva.

* Fluxio in oculos Ophthalmia appellatur in qua oculi tumescunt.—Vide Hippocrates de glandulis.

Inflammation, as it affects the eye itself, and cognizable as an external disease, I shall designate by the name of *sclerotic inflammation,* or *ophthalmitis sclerotica,** as the term which most distinctly describes the seat and the nature of the disease. The leading and characteristic features of these two forms of inflammation must be thoroughly understood, in order to arrive at a just or rational treatment of either.

The conjunctiva, which gives a general covering to the eye, corresponds with the investing membrane of the different canals of the body, which have an external communication, and is of extreme tenuity, though susceptible of being greatly thickened by disease: this membrane, besides covering the eye, affords a lining to the inner surface of the eyelids, to all of which parts it is loosely attached by a fine tissue of cellular substance, until it reaches the cornea, when it becomes so closely united to the sub-

* This term I found highly useful, for the purpose of conveying clinical instruction. On the present occasion I would have proposed the adoption of the word Ophthalmitis, in distinction to Ophthalmia, had I not found that Professor Beer has applied this term to inflammation affecting the conjunctiva, as well as of the proper structure of the eye; the symptoms of chemotic or conjunctival ophthalmia forming, according to his classification, the first species of ophthalmitis. Ophthalmia, in the restricted sense to which I confine its application, may yet supply the use of the more formidable terms of blephoro-blenorrhæa and ophthalmoblenorrhæa of Schmidt and Beer.

jacent lamina, as to become incapable of anatomical demonstration.* Its transparency enables us to observe the phenomena of inflammation, not only as they occur in itself, but also in the sclerotic coat which it covers. In its healthy state, it secretes a serous fluid, sufficient to lubricate its surface, liable to be suppressed, increased, or altered, by the presence and progress of inflammation; like the membrane of the urethra, it possesses a very high degree of sensibility to the impression of foreign bodies, however small: but this ceases to be excited if their application be frequently repeated. By its reflection on the eyelids, a double surface is necessarily irritated, by the presence of any extraneous matter: the motions of the palpebræ keep up irritation by the perpetual change of surface over any foreign matter; but the presence of light, which in this case appears to add so much to the irritation, is hurtful only in as much as it is the cause of motion in the palpebræ, hence relief is equally procured by darkness, or by preventing the motion of the eyelids.

The blood-vessels of the conjunctiva, when distended, have little connexion by anastomosis with

* That the membrane does not extend over the cornea has been inferred, from the difficulty with which inflammation is found to extend beyond this line of demarcation; other phenomena of diseased action enable us, however, to trace its continuity.

those of the sclerotic coat, but seem to form a distinct layer of themselves. In truth, the conjunctiva is little else than a congeries of lymphatic veins, leading from the circumference of the cornea to the duplicature of the membrane, and by which the serous portion of the blood is returned from the internal parts of the eye into the general circulation. Inflammation of the conjunctiva, therefore, besides other modifying circumstances, partakes more of a venous than arterial action, one quality of which may probably be, the rapid conversion of its healthy secretion, first to a mucous, and ultimately to a puriform discharge.

The sclerotic coat is a dense substance, and, as the name implies, particularly hard and unyielding in its structure, partaking more of the nature of cartilage than membrane, and distinctly opposite in all its pathological relations to the membrane of the conjunctiva: by the older anatomists it was divided into opaque and transparent cornea; the propriety of the distinction has been the subject of much discussion, into which it is quite unnecessary to enter, as it concerns words more than realities. The cornea, differing as it does in its minute anatomy from the structure of the sclerotic, is, nevertheless, a strict continuation or production of the former, as far as it concerns its vascular connexion, and

the subserviency of its circulation to that of the sclerotic. The sclerotic coat is supplied with blood from the ophthalmic artery,* given off from the internal carotid, and its inflammation invariably exhibits all the marks of strict arterial action. Inflammation does not take place in the cornea, and consequently neither suppuration nor ulceration, until inflammatory action has been set up in the vessels of the sclerotic coat, even when the exciting cause is applied directly to the substance of the cornea. No symptom of re-action

* The circulation of the eye displays an interesting view of the œconomy with which the singular mechanism of the organ is accomplished, the distribution of the blood being rendered subservient to the production of a camera obscura, associated with parts of the most perfect transparency, for the admission and refraction of light. The colouring particles of the blood become either concentrated in the circulation of the choroid coat, in which case it produces the tapetum lucidum, or they are deposited on the surface of this part, and on the posterior portion of the iris, while the serous albumenous parts are conveyed on to supply the parts concerned in the transmission of light. Pathology presents a converse illustration of the same view, for when the vessels of these parts which, in their natural and healthy state, permit the entrance of the transparent parts of the blood only, can no longer resist the admission of the red globules propelled by the impetus of inflammation, besides the high degree of irritation consequent on the distension, a smaller deposition of pigment would seem to take place, for the iris assumes a shade somewhat lighter, and the increased sensibility to light may certainly, in part, be owing to a correspondent diminution of pigment.

is visible, until that part of the sclerotic coat which is nearest the injured portion of the cornea has put on the appearance of inflammation; on the other hand, idiopathic inflammation once excited in the vessels of the sclerotic coat, invariably tends towards the cornea, and there, in consequence of the more destructible nature of the part, the common consequences of inflammation take place, such as effusion of lymph, and ulceration; effects we shall have afterwards occasion to consider, not only in reference to their general laws, and the specific appearances which they here present, but also as they are productive of permanent consequences, more or less destructive to vision.

The intimate connection formed on the internal surface of the coat with the iris, and the ciliary structure, would naturally lead us to expect, that the inflammation would have an early tendency to seize upon these parts; attentive observation, however, will prove, that in ordinary or idiopathic inflammation, any apparent affection of the iris is more the effect of sympathy than of the actual presence of disease, and that the supervention of iritis is, according to my view of the subject, to be considered as a distinct form of sclerotic inflammation, connected with some idiosyncracy, or morbid diathesis, previously existing in the constitution, and is, for the most part, more insidious in its progress than

violent in its symptoms. As before any degree of acute inflammation can establish itself, either in the cornea, or in the iris, a similar action has taken place in the sclerotic coat, so the farther progress of disease, in either of these parts, continues to be indicated by the greater or less activity of the inflammation in the sclerotic, and to this appearance too much attention cannot be paid. The feelings of the patient, the stationary appearance of other symptoms, may lull the practitioner into a fatal security, which he will best avoid by making the condition of the sclerotic coat the only safe test of the arrested progress of the disease.

The violence as well as the duration of inflammation is, *cæteris paribus,* according to the resistance opposed to the distension of the vessels which have become the subject of inflammatory action. The resistance may be owing to the tone of the vessels themselves, the tension of the surrounding parts, or the impenetrable nature of the more dense structure, of which particular parts are composed; those which in health possess but a low degree of vitality, and whose vessels are not adapted to the circulation of red blood, such as cartilaginous and ligamentous structures, have their inflammation accompanied by a high degree of pain and irritation. As the vessels enlarge by slow degrees, and in an extent too limited to admit the ready accession of relief by the escape of lymph,

or by the more advanced termination of suppuration, and their tone being less speedily exhausted, they remain for a long time in a state of active inflammation; of the truth of this law there can be no better illustration than the symptoms and history of inflammation, as it respectively or successively attacks the sclerotic coat, or conjunctiva of the eye; and, in the former case, according as the force of the disease is directed towards the iris, or the cornea.

The conjunctiva is capable of being stretched to a great extent, owing to the loose structure of the cellular membrane on which it lies, little resistance is consequently given to the enlargement of its vessels; by slight irritation they soon become distended with red blood, but their tone or power of reaction is speedily exhausted, and if the exciting cause is not kept up in an increasing ratio, they quickly fall into a chronic, or varicose enlargement, or again contract to the diameter of serous vessels; but for this laxity of structure, every casual irritation would lay the foundation of a tedious inflammation. Inflammation in the sclerotic coat, on the other hand, is slow in taking possession of the part, being often insidious in its progress, even when its ultimate violence is great. In the early stage of conjunctival ophthalmia, the inflammation is most observable at a distance from the cornea, round which the mem-

brane often preserves, for a length of time, its natural appearance; precisely the reverse takes place in the case of sclerotic inflammation, which invariably appears at the circumference of the cornea, forming a zone more or less complete around it, most conspicuous at the upper part, the form and colour of the vessels being at the same time wholly different from those which appear in the course of conjunctival inflammation. Intolerance of light invariably accompanies sclerotic inflammation, and is entirely unconnected with that of the conjunctiva. When the force of the exciting cause produces any high degree of conjunctival ophthalmia, the vessels at an early period endeavour to relieve themselves, by the usual changes induced by inflammation, and which being modified by the nature of the part, constitute the more specific symptoms of ophthalmia; the first effect is perceived in the increased and altered quality of the fluid, poured out from the external surface, a portion of the albuminous or coagulating constituent of the blood escapes, and is found floating in the lacrymal discharge; a farther increase of the inflammation occasions an effusion to take place from the interior or attached surface. The appearance which this spontaneous effort of the vessels occasions, is known by the term chemosis. The cornea becomes completely surrounded by the elevated conjunctiva; this

symptom produces a striking alteration from the natural appearance of the eye, but, in reality, although it proves a considerable degree of violence in the exciting cause, is in itself one of those happy events by which nature counteracts the evil which would otherwise ensue. From the immediate contiguity of the conjunctiva to the sclerotic coat and the cornea, the inflammation would speedily extend to those parts if this effusion did not take place. The distension of the cellular membrane now presents, for some time, an effectual barrier to the encroachment of the vessels on the margin of the cornea, or to their propagating their inflamed action to those of the sclerotic coat beneath. The same beneficial consequences happen, when by any external injury echymosis, or extravasation of red blood, takes place in this part, as often occurs in consequence of a blow inflicted on the eye. Although the echymosis conveys an appearance of much injury, it prevents inflammation, the blood is rapidly absorbed, and the eye regains its healthy state sooner than if extravasation had not taken place. Chemosis is, for the most part, sudden in its formation; there is no appearance of red blood but what is confined in its proper vessels, but these are exceedingly minute, and seem to give a homogeneous tinge of red to the tumid membrane, more or less deep according to the duration of the disease. Chemotic inflammation is not accompa-

nied by any painful sensibility to light, and there is seldom any acceleration of pulse. The inflammation, and consequent chemosis, may sometimes be the effect of a sudden suppression from the external surface of the membrane, being that form of ophthalmia which occurs from causes which give a sudden check to perspiration, as we shall have future occasion to observe. When neither of the changes now mentioned prove adequate to break the force of the disease, the vessels acquire a new power of relieving themselves, and of effecting a remarkable change in the properties, as well as the quantity of the discharge, constituting a state of action in every respect analogous to the suppurative process in solid parts; the discharge now produced has all the properties of pus, and the copiousness with which it is secreted is as great as that which occurs in the suppuration of any part of equal superficies, and possesses the singular quality, like the discharge of gonorrhœa, of producing a similar disease, if applied to the analagous parts of another person, thus forming an animal virus of great activity, the contagious property of which will fall to be discussed, when we come to consider more particularly the nature of purulent ophthalmia.

The means of subduing inflammatory action for the present need only to be stated so far as they tend to illustrate these general characters of

ophthalmic inflammation; they may be comprised under three general heads; the first consisting in remedial efforts applied to the system, with the view of diminishing local action, of which venesection is the most certain and the most powerful. The second embraces the means of lessening the immediate impulse of the blood to the diseased part, by emptying the supplying trunks, or by giving a new direction to the existing impetus. The third consists in the application of agents to the immediate seat of the disease, by which the morbid state of the vessels may be altered or subdued.

Inflammation in the conjunctiva, while it has little dependence on the general state or condition of the system, and seldom excites any of the constitutional effects of inflammation, is, on the other hand, but little affected by any moderate reduction in the force of the general circulation; depletion from the system must therefore be carried to its farthest limit, in order to make any sensible impression on a part so far removed from the force of arterial action; yet by another law, no less certain, we find that if the abstraction of blood, by venesection, either of the arm or neck, be carried to the extent of producing a state of syncope, the suspension of action, and the collapse of the vessels thereby induced, will prove the end or cure of the disease. The salutary effect of

syncope I can only ascribe to the laxity of the vessels rendering them unable to recover their former tone and state of excitement; and it is only as far as we hold this specific effect in contemplation, that venesection is to be regarded as a principal remedy in the treatment of ophthalmia. The strength and fibre of the patient may be reduced, by abstinence and repeated blood-letting, to the lowest standard, without producing any material benefit, or insuring the organ against the destructive consequences of the farther progress of inflammation.

The effect of syncope, produced in the way now mentioned, has no such controul over the inflammation, which supports itself in the vessels of the sclerotic coat; and as it cannot be made by this summary effort to quit the hold which it has obtained, instead of urging the practice to a greater extent, we must endeavour to obtain the object by means more immediately directed to the part. The abstraction of blood in quantities proportioned to the violence of the symptoms, more especially by means of cupping and leeches, has, for the most part, a sufficient controul over the various states and individual symptoms of sclerotic inflammation as to render any larger bleeding unnecessary.

Besides the beneficial effects of bleeding by leeches applied to the adjacent integuments, we have a still more advantageous command over ocular inflammation, by the direct application of the animal to the conjunctival lining of the inferior palpebræ, and, in many of the more obscure cases of amaurotic inflammation, I have derived very great assistance by applying them to the septum nasi. The orifices which they here make bleed most freely, and may be supposed to afford the speediest relief in any congestive state of the ethmoidal circulation; and, as they never occasion echymosis, the place is particularly eligible where external appearances require to be consulted.

There is much indiscriminate and empirical practice observable in the various applications made use of as remedies for ophthalmic inflammation. The peculiarity of the organ seems to have sanctioned a departure from the strict rules for the treatment of local inflammation, without a sufficient consideration of the grounds on which such a deviation is authorized.

The exclusion of light, so invariably enforced, is often more detrimental than useful. The eye becomes more irritable, and less manageable, when defended from the access of a moderate degree of light; its exclusion can only be permit-

ted during the very early stage of inflammation. I have treated many thousand cases, and I have never suffered a shade to be worn.

A free exposure to a temperate atmosphere, which, in cases of conjunctival ophthalmia, is the most salutary of all external applications, is necessarily prevented by the means employed with the view of protecting the eye from the light.

All washes, applied to the external parts of the eye, are for the most part worse than useless; the powerful agency of heat and cold ought to be employed with great precision, and with due energy, or not at all. The eye-glass, or cup used for the application of collyria to the surface of the eye, is troublesome and inefficient. The only proper mode of directing such applications is by everting and extending the eyelids, and injecting the fluid over the whole surface, which is best accomplished by an elastic gum syringe.

Blisters are often most improperly applied with a view of relieving the inflammation of the eye, and too often increase the disease they were intended to remove; when applied near to the eye, they appear to excite a greater flow of blood towards the inflamed vessels; this is particularly evident with respect to the temples, where they never fail to prove injurious, by increasing the action of the arterial trunks, over which they are applied. There is but one exception to this as a general

rule, for it would seem, that blisters applied to the external surface of the palpebræ, in cases of purulent ophthalmia, tend considerably to diminish the purulency and chemosis. It is a practice which I have not had occasion to employ, but I speak of it from having received many patients, with whom it had been adopted with apparent relief to the disease.

Besides the dependence which may be placed on the judicious management of the general means for the relief of inflammation, in counteracting particular symptoms, some of the most powerful substances which have been found applicable to medical purposes, can be here applied with a certain and measured effect. The powerful efficacy of belladona, but more particularly that of hyosciamus, and stramonium, the oculist can employ with a certainty, more akin to the mensurable nature of physical force, than the uncertain operation of an animal stimulant. While combating the force of the general inflammation, by the use of these agents, he will be enabled to secure the important structure of the iris from injury; and he can even employ them as a mechanical force in detaching any recent adhesion. The argentum nitratum is a remedy which, in the hands of an oculist well skilled in the symptomatology of ocular inflammation, and capable of using it with the extreme delicacy necessary to

insure its success, may often supply the absence of every other; the slightest application of it in substance can often remove the highest degree of morbid sensibility to light, and instantaneously restore quietude to the organ; it can prevent incipient changes, and obviate advanced ones, and may also be used in solution, as a valuable sedative.

With respect to conjunctival ophthalmia, there is not, perhaps, another disease for which remedies of greater specific efficacy have been found. For the purpose of altering the violent and purulent state of the membrane, it is impossible to possess a medicine of greater efficacy than the liquor plumbi sub acetatis, infused in an undiluted state. The effect of nicotiana, as a narcotic and astringent, applied externally, is of singular use in abating both the pain and the excessive tumefaction which attends the disease, and constitutes a very valuable addition to our other resources.

The view which this brief enumeration affords, of the means which we possess of subduing these different forms of ophthalmic inflammation; will be sufficient to show, that the safety of the organ may be fully assured, under the most violent attacks which its inflammation is liable to assume. The most arduous part of the cure occurs from the disease being seldom confined to one eye, but

from the sympathy, contiguity, and exposure of the two organs to the same causes, we have generally the same form of disease to combat in immediate succession. Inflammation is never equally advanced, or equally urgent in both eyes at the same time; and when we have succeeded in arresting its progress in one, it does not follow that the means, however successful they may have been, will not require immediate repetition, by a sudden advance of the symptoms in the eye more recently attacked by inflammation. Powerful as I have stated the operation of syncope, induced by the abstraction of blood, to be in obtaining a resolution of purulent ophthalmia, it will not by any prophylactic power prevent the necessity for its repetition, on account of the accession of the disease in the other. The same may be said of the use of mercury, in cases when it exerts a specific efficacy in arresting inflammation. The severity, therefore, of any mode of treatment is a source of double regret, and renders the necessity of administering it with inflexible decision still more important.

The detailed treatment of the different forms and symptoms of ophthalmic inflammation will be pointed out, as we proceed in their pathological description, and I shall conclude these more general remarks by presenting a tabular view of the different forms consonant with the

outline I have drawn, rather as exhibiting an index to the observations I am about to offer, than as an attempt to introduce a better arrangement of the subject.

Ophthalmia, or Conjunctival Inflammation.

Sp. I.—Catarrhal Ophthalmia, or *opthalmia mitior,* sporadic, endemic, and epidemic, with or without chemosis.

II.—Puriform or ophthalmia purulenta, *ophthalmia gravior,* the *lippitudo,** *ophthalmia vera, ophthalmia humida* of the ancients *blepharoblenorrhœa,* and *ophthalmoblenorrhœa* of the German Ophthalmologists.

a Ophthalmia of infants.

b ——— produced by the infection of ophthalmic virus.

c ——— by the infection of gonorrhæal virus.

d ——— by the metastasis of gonorrhæal inflammation.

e Rheumatic, syphlitic, and arthritic.

Ophthalmitis sclerotica.

Sp. I.—Idiopathic, or corneal.

II.—Irridial or Symptomatic.

* The misapplication of *lippitudo* to a chronic and glandular disease is perhaps too inveterate to be now rectified; in its original sense it applies to the acute stage of ophthalmia.

In the particular investigation of these diseases I shall deviate from what may appear the more natural order for discussing them, these observations not being intended for the use of those who have had opportunities of rendering themselves masters of the progression of symptoms of which they treat, but to assist others in obtaining an easy apprehension of their appearances, when they first meet with them. As the destructive effects of ophthalmia are owing to the propagation of the disease to the sclerotic coat, these will be better understood when seen and considered independent of the conjunctival disease, the excessive tumefaction and purulency of which is liable to distort the view, and give false appearances to the changes which belong more particularly to the presence of sclerotic inflammation.--- I shall, therefore, commence with the consideration of various changes which mark the progress of this deeper seated inflammation.

CHAP. II.

OPHTHALMITIS SCLEROTICA.

The symptoms of sclerotic inflammation are those which systematic authors usually admit into the definition of ophthalmia. The causes which give birth to it are external or internal, general or specific; the first comprehends the various sources of irritation arising from mechanical or chemical stimuli, such as blows, punctures, the lodgment of extraneous irritants on the surface of or imbedded in the conjunctiva, and still more especially when applied to the cornea; acrid fumes, cold air, excessive application of the organ, exposure to great heat or reflected light, the violence of conjunctival ophthalmia, of which it forms the advanced stage, as well as from the irritation of the diseased or granular state of the palpebræ which that disease so often leaves behind it. The internal causes proceed from a certain proneness of the part to inflammation, under certain diseased and disturbed states of the constitution; it is liable to occur with continued fever, but we find it more frequently taking place, after the decline of the eruptive or exanthematous disorders: under such

circumstances it has been distinguished under the name of morbillous and variolous ophthalmia; in consequence of its appearance after the decline, but evidently connected with some remaining influence of these diseases—having nothing however peculiar in its nature, excepting that it often exhibits great violence in the symptoms, and a very indomitable disposition to terminate in a læsion of the cornea. Sometimes it occurs as a metastasis of gonorrhœa, and proceeds with great rapidity to destroy the cornea.

From these causes, the disease exhibits what may be considered its idiopathic character, and presents itself under the decided form of phlegmonic inflammation; as such it is chiefly met with in children and among the labouring and healthy part of society. For the sake of greater perspicuity, I shall distinguish it by the appellation of sclerotico corneal inflammation, the latter part of the term being, for reasons I have already assigned, insufficient to indicate the real seat and nature of the inflammation by which it is affected. Sclerotic inflammation, on the other hand, when produced by some more general and pre-existing disease of the system, is perhaps the most frequent and destructive form of ophthalmic inflammation that is met with in crowded cities, and at the more advanced periods of life. From the tendency to proceed in an internal direction, I ven-

ture to distinguish it from the other by the term of sclerotico choroidœal, requesting the reader merely to carry in his mind, that whether the inflammation proceeds from the iris to the sclerotic coat, or *vice versâ,* the inflammation has its active character and basis in the structure of the sclerotic coat.

In the former the exciting cause is for the most part external, and the inflammation occupies the external surface *—in the other, the inflammation

* This inflammation constitutes according to its duration the Ταραχίς and Απριξή of the ancients. The first, or *contubratio* applies so long as the affection is merely a temporary fullness of the vessels. The latter term is used when instead of an ephemeral redness, it becomes a confirmed inflammation, with a tendency to produce apostemesation of the cornea, as the following extract will illustrate:

"Ophthalmia est vera; et alia est ei similis, quæ nominatur conturbatio; cum accidit oculo ex causis extrinsecis agitantibus ipsum, et rubificantibus eum, sicut sole, et soda adustiva et ephemera adusta, et pulvere et fumo et frigore in quibusdam horis propter constrictionem ipsius, et percussionem propter commotionem ab ipsa, et vento procelloso. Illius vero totius impressio levis, est associata causæ quæ non ita remanet post ipsam, ut de ea sit curandum: et si non medicatur, removetur cum remotione causæ multoties: et nominatur græce (Ταραχις) quod si eam causa corporea aut extrinseca juverit materialem primam, possibile erit tunc ut velociter permutetur in apostema manifestum et verum; sicut mutantur febres ephemeræ in alias febres. Cum autem permutetur et est in principio permutationis, nominatur græce Απριξή

Avicenna, Venetiis, folio 221.

manifests a rheumatic character without any definite termination; and by its ready extension to the iris, is chiefly known as iritis.

Under this last form we frequently meet with it as a symptom of syphilis, apparently also as the effect of a merculiarized state of the system where no syphilitic taint can be suspected; it occurs also, as we shall afterwards have occasion to notice, as the local manifestation of a rheumatic and arthritic diathesis.

We shall first consider the disease under its more simple and external aspect, *i. e.* with a disposition to terminate in læsion of the cornea, as the readiest and most natural way of arranging the various consequences and appearances of sclerotic inflammation.

The first set of symptoms may be considered as generic or common to both states of the inflammation, and may be comprehended under the following heads; *an increased vascularity* of the part, *morbid sensibility to the impression of light, contraction of the pupil, pain, heat, augmented secretion of the lachrymal fluid, pyrexia.*

In the inflammation of other external parts, we infer, that the size of the capillary vessels is augmented by the swelling, by the homogeneous red colour, and those other changes which we denominate inflammation. Here the vessels themselves are exposed to view; we can observe their rise, pro-

gress, and decline; we can deduce, as from experiment, all that can be known relative to the phenomena which they exhibit.

The circumstances to be regarded in the appearance of the inflamed vessels of the sclerotic coat, are chiefly these: posteriorly we observe only a few interspersed trunks, which do not affect the natural appearance of the intermediate space, but these diverging as they come forwards, produce a zone, more or less complete, of minute hair-like vessels, distinguished by their rectilinear direction, and their uniform concentration towards the margin of the cornea; their colour advances with the progress of the disease, from that of a delicate pink, or damask rose, to a deeper hue, and imparting a faint blush to the part immediately surrounding it. As yet the posterior portion of the eye, and the surface of the palpebræ, preserve their natural appearance; any sign of inflammation in the latter is confined to the vicinity of the tarsus, the remaining part of the membrane keeping a white and healthy colour. I think it hardly necessary to observe, that the vessels of the sclerotic follow the motion of the eye, and may, from that circumstance, be distinguished from those of the conjunctiva, the vessels of the latter, independent of their darker colour, their more tortuous form, and varying size, have likewise a more longitudinal direction, and as they proceed from the angles of the or-

bit, they form radii of a larger circle. The distinction between the inflamed vessels of the conjunctiva and the sclerotic, I consider to be, therefore, obvious, but that any difference can be observed in the arrangement or appearance of the vessels of the latter, sufficiently distinct to indicate the peculiarity of the exciting cause, or specific nature of the case, is more than I have been able to perceive; the general character, as it arises out of the structure of the part, will be found the same, whether the cause be the gout, rheumatism, or syphilis. The vessels, such as I have described them, will always be most observable on the upper portion of the eye, as it is in that place that the inflammation is most intense, except when its locality is affected by an external exciting cause, in which case it will be greatest near the injured part.

The encroachment of the vessels on the margin of the cornea, and an immediate intolerance of light (*photophobia*) are inseparable occurrences. This advance on the limits of the cornea is not effected by the extension of any single fasciculus of vessels, as in pustular ophthalmia of the conjunctiva, but by an uniform and defined line of progression. Their colour within the circumference of the cornea is considerably darker, and the encroachment of the vessels is generally attended by a relaxed appearance of the conjunctival covering, as if detached in some degree from the lamina

underneath, and the portion of the cornea thus encroached upon, when the activity of the inflammation abates, especially when it has been of long duration, is liable to suffer a loss of its transparency, and to assume the appearance of being a continuation of the sclerotic coat; by repeated attacks of inflammation, we often find the cornea much diminished in the extent of its circumference; this conversion of transparent cornea into the white and opaque structure of the sclerotic often takes place by chronic inflammation, so obscure in its symptoms as to escape observation, and, as such, is often most injudiciously treated, from being considered rather as the effect of a weakness of the organ, than as dependent on an over excitement of the vessels of the sclerotic coat. A similar conversion is very common in old age, in which case it forms a more complete ring, and hence called the annulus senilis. This morbid sensibility to the impression of light. occasionally amounting to an utter intolerance and dread of its presence, is an invariable concomitant of the inflammation the instant it affects the limits of the cornea; though generally regarded as a symptom more immediately belonging to inflammation of those parts of which light is the natural stimulus, and which contribute to the perceptive faculty of the organ, *viz.* the iris and the retina.

When inflammation affects the cornea, it is true that contraction of the pupil is in proportion to the increased sensibility to light; yet the iris is seldom more safe from any actual attack of inflammation than when this action is proceeding with its utmost violence in the substance of the cornea, and we never find the urgency of this symptom so distressing as in those cases where extensive destruction of the cornea is going on. It is also true, that when the pupil is much contracted, a slight variation of the colour of the iris is also observable; it assumes a lighter or a somewhat greener shade towards its inner circumference, and, although this is almost the only visible change which attends the early stage of actual iritis, yet, as the contraction of the pupil in the present case, is rather to be regarded as a sympathetic effort of the part, so the slight difference in the colour of the iris appears simply the effect of a greater expansion of its fibres; those of its inner circle being of a lighter colour than those of the outer, in most eyes. The morbid sensibility to the presence of light, keeps pace with the visible inflammation of the sclerotic coat and the cornea, both in its advance and decline, and unless some decided alteration takes place in the appearance or structure of the iris, to substantiate the actual existence of inflammation, it is assuming more than a just expla-

nation of the symptoms required, to refer either the intolerance of light or the contraction of the pupil to a direct inflammation of this part. In a circle of phænomena, so intimately connected as those of inflammation, it must be exceedingly difficult to distinguish the exact order of their individual relations; but intolerance of light and contraction of the pupil, unless when accompanied by more evident signs of diseased action in the iris, I farther infer to be merely symptomatic of the inflammation of the sclerotic coat and cornea, from their invariable attendance upon every degree of such action, so long as these parts possess their natural and healthy tone; their instantaneous abatement by the application of caustic to the vessels leading to the cornea, and also from the sudden remission which takes place by puncturing those pustular or papular elevations which frequently form at the edge of the cornea, and which are so often attended by high irritation. On the contrary, I may observe, that when the cornea becomes softened by disease, the highest excitement of the vessels ceases to be attended with any great degree of intolerance to light, a state of disease which we shall have future occasion to consider. The relation which photophobia has to one part of the organ more than another, may at first appear of little importance; the hasty assumption, however, of its being referrable to the nervous or effi-

cient structure of the organ, has led to two opposite errors in practice. An inflammatory or congestive state of the deeper seated parts of the organ, so far from being accompanied by an augmented sensibility, more frequently occasions a contrary state; while, on the other hand, that weakness of sight, or inability to use the eyes in a strong light, often indicates an obscure inflammation in the sclerotic coat, affording two examples of inflammation attended by symptoms the reverse of each other; both require the employment of antiphlogistic are remedies, and both often aggravated by pursuing a contrary practice.* When the vessels of the sclerotic have pushed forwards into the structure of the cornea, others of a larger and darker colour soon become visible, belonging to the conjunctiva, and proceeding from the cornea to the duplicature of the membrane on the palpebræ, the internal surface of which, in the advanced stage of the disease, becomes inflamed also.

The internal membrane of the cornea, or what has been gratuitously named the membrane of the aqueous humour, has been described as a principal seat of corneal inflammation. I am not aware of any symptoms which characterize the inflammation of this part of the cornea in particular. An increase of the aqueous hu-

* For the good effects attending the antiphlogistic treatment of this affection, see an Essay by Mr. Stevenson.

mour, granting that such an event actually occurs, if owing to any morbid effusion, would exhibit some change in quality as well as in quantity; no such change is, however, observed, excepting in the obvious case of hypopion, the matter of which invariably descends either from the iris, or from a penetrating ulcer of the cornea. I feel, therefore, disposed to regard any augmentation of the aqueous humour as depending upon an encrease of the natural secretion, the source of which there is every reason to attribute to the posterior, rather than to the anterior chamber of the eye.

Pain.—This symptom would admit of great latitude in its description, not being confined to the eye itself, but occurring in various parts of the head and the orbit, subject to intermission and change of place; its exacerbations, whatever may be the external appearance of the disease, are always to be regarded with alarm, and in this early stage of the complaint it appears to be the effect of tension; as it accompanies particular symptoms, it will be noticed as we proceed with their investigation.

Pyrexia, with a very acute state of the inflammation, the usual symptoms of febrile action; such as heat, thirst, prostration of strength, and loss of appetite, occur. The most inseparable, however, of the constitutional symptoms, are, an

increased frequency of pulse, and inability to sleep. Inflammation, affecting the proper structure of the eye, appears to have a very singular effect on the action of the heart and arterial system. An increased frequency of pulse being not only, as might be expected, attendant on the more acute state of the inflammation, but it is also present in a very remarkable degree when the symptoms are so obscure as to escape common observation; aware of this circumstance, I have often had occasion to point it out in cases where, from the perfect state of the health, and the absence of the usual signs of inflammation, the existence of such a disease did not suggest itself.

Lachrymation.—The lachrymal secretion is for the most part much augmented, and escapes in large drops whenever the eye is disturbed by light or motion, and the scalding sensation with which they are accompanied, is to be regarded as a proof of the active nature of the inflammation, and affords an important practical indication for persisting in the use of the antiphlogistic treatment.

When a farther distention of the arterial capillaries occurs than is compatible with the receiving power of the next series, an extravasation or deposition of a constituent part of the blood, either lymph or serum, ensues; by a still higher excitement the blood undergoes such a previous alteration, as to give birth to a product differing some-

what in its qualities from any of its component parts, whether separate or combined: the action by which this change is effected is termed suppuration. The inflammatory action of the vessels of the cornea appears limited to the first of these terminations, the matter effused not partaking of the essential qualities of pus, but preserving the tenacity and other properties of lymph. The deposition occurs in various degrees, producing slight nebulous suffusions, or in the form of actual slough either in the middle lamina or on the external surface; in the former case it has very much the common appearance of an abscess, or collection of fluid pus, and has always been considered as such. This appearance, however, is entirely fallacious. Matter formed in the substance of the cornea never possessses fluidity, nor exhibits what is technically known by fluctuation; and a puncture made by the lancet is never followed by its evacuation; it possesses the consistency and tenacity of lymph, while in colour only it resembles pus. Vitality is afterwards restored to the part occupied by this deposition either by separation, by the means of the ulcerative process of the lymph first deposited, or by the ramification of the blood-vessels entering into it from the surrounding surface. The external deposition of lymph becomes slightly elevated, and is soon insulated by a line of ulceration; and if after the removal of the slough the

ulcer is disposed to heal, the surface becomes transparent; the loss of substance is gradually repaired by the gradual deposition of fresh lymph. The removal of the original slough and the restoration of the substance of the cornea will be treated of under the head of Ulceration, to which we shall proceed, after giving a general outline of the treatment to be adopted to prevent the accession of such consequences.

Treatment of Sclerotic Inflammation.

The form of inflammation which we have just described being the frequent consequence of mechanical irritation, the cause of which may be concealed from a superficial view of the eye, as well by the nature of the part, as from our attention being misled by the focus of the inflammation taking place at a distance from the injured part. Our first object must, therefore, be to ascertain the presence of any foreign matter, by a careful examination of the whole surface of the conjuctiva, to do which it is necessary to evert the upper eyelid, by means of a blunt probe, or any other convenient instrument; and it will not unfrequently happen that some extraneous body will be found concealed at the duplicature which the membrane forms in passing from this part to the globe of the eye, though the patient may have ceased to be conscious of any such circumstance, and which, when dis-

covered can easily be removed. Where particles of matter more minute and diffused have found access to the surface of the eye, the injection of tepid water over the everted membrane, as well as of the eye itself, is an obvious and necessary precaution, and best accomplished by the elastic gum syringe. When the irritation has been of some duration, instead of water an infusion of poppy, of mallow, or common tea, may be substituted with advantage. At other times we may find that the inflammation is caused by a diseased portion of the palpebral linning, in which case we are first to reduce the inflammation and then proceed to remove the exciting cause.*

The inflammation having once taken possession of the part, it is impossible, as has been already stated, to cut it short by the impression which a free use of the lancet is capable of effecting, in cases of simple inflammation of the conjunctiva. It must be still more evident, that when actual læsion of the vessels has taken place, that no extent of depletion can remedy the evil sustained; and any degree of excitement above what is consistent with the advantageous reparation of the injured part, may in general be trusted to the control of local blood-letting. For this purpose, and at all periods of the inflammation, I have found the abstraction of blood from the

* Cum scabiei associatur ophthalmia cura prius ophthalmiam deinde procede ad scabiem. Avicenna Editi: citata folio 229.

temple, by means of cupping, to be indisputably the most effectual method of subduing the disease, and of mastering its farther progress. The operation of cupping may be aided by the application of leeches to the integuments, or, what for the most part is better, to the inner surface of the lower eyelid. While the practitioner keeps steadily in view the necessity for local depletion, cases will often occur where it will be necessary to take away blood, and that largely, from the system also; in these the habit of the patient must decide the extent of the general evacuation, to ensure the effect of the means more immediately directed to the part. The force of the general circulation may also be reduced by the exhibition of antimonials, given in such doses as will keep up a considerable degree of nausea, the direct effect of which in abating inflammation is great, while it produces the further good of forcing the consent of the patient to a due reduction of diet.

Dividing or opening the temporal artery has been considered as uniting the advantages of local to those of general depletion. With such a view I tried it at one time extensively, and I speak with deference in saying, that my experience of its utility does not correspond with the general sense entertained of its efficacy, having always found that a smaller quantity of blood obtained by cupping to be of more real service than a much larger quantity taken from a single branch of the artery.

Some explanation of this result may perhaps be found in the power which arteries possess of rapidly accommodating themselves to the exigency of the part which they supply, so fully exemplified in the history of tumours, of aneurisms, and in the various periodical changes to which the action of these vessels are subservient. The opening of a branch of the temporal artery seems immediately to occasion a greater flow of blood into the others; they evidently increase in size during the operation, and continue so for a considerable time afterwards. If the principle arterial trunk of an extremity is wounded, or otherwise obstructed, the anastamosing branches speedily carry the same quantity of blood as before, and with a greater degree of action, for the temperature of the part soon exceeds the natural standard, below which it had at first fallen. We may therefore perhaps infer a similar effect to follow a division of the temporal artery, and which will necessarily affect the circulation of the eye, which the bandage necessary to be applied after the operation may further increase; but whatever be the theory, the local benefit is much greater if the blood is taken away by cupping, while every other advantage is both more easily and more effectually attained by venesection, performed in the neck or the arm.

In cases of violent inflammation, where the presence of light is utterly intolerable, great assistance is gained by the proper use of cold, which may be

done by applying wet compresses, kept constantly below the temperature of the atmosphere. By making a solution of opium or hyosciamus, the medium of applying the cold, we greatly add to the relief which it affords. We must be careful, however, not to mistake the temporary relief of the symptoms for a security of the organ; the disease must be carefully watched, and no external applications be suffered to conceal the changes which may be going forward. In slighter attacks of inflammation, the application of cold will often augment the irritability of the organ, and we can afford more effectual relief by the occasional use of hot fomentations, and the vapour of water, or water and vinegar.

Warm poultices and long continued fomentations are most especially conducive to the destructive consequences of ophthalmic inflammation, the relief they may afford being treacherous in the highest possible degree; and so obvious is their tendency to effect relief, by accelerating the destruction of the cornea, that I should consider any patient entitled to recover damages in whom the disease has terminated unfavourably, whenever it has done so under the application of a poultice.

The application of the argentum nitratum, formed into a finely pointed pencil, to the vessels leading into the cornea, will be found to afford very great relief, and for this purpose it is sufficient barely to touch the surface of the conjunctiva with the greatest delicacy, after which let the eye be imme-

diately washed, by injecting a little tepid water with an elastic gum syringe. Used in this way, the remedy appears to act rather by producing some specific change in the state of the vessels than as a caustic; and applied as is here meant to be recommended, it occasions no pain, either at the time or afterwards.

A mistaken confidence in the efficacy of topical applications, has multiplied in an excessive degree the number of supposed remedies for the treatment of this disease, which unnecessarily usurp the time and attention of the practitioner, by which the more important measure of depletion is either omitted or delayed. To this subject I may with great justice apply the words used by Sydenham, in speaking of the treatment of small-pox:—"*Quocirca, cum præcipue hæ fuerint indicationes curativæ, ubi iis modo jam tradito fecero satis, nihil amplius mihi restat agendum; in quantum scilicet Medicus sum, non vero formularum medicarum Præscriptor; quas ego duas, sive artes, sive dotes, sive etiam provincias appellare libeat, toto cœlo a se invicem distare arbitror.**

Unctuous or oily substances disagree very much with the healthy surface of the conjunctiva, and are therefore seldom admissible while that membrane maintains its natural state; by means of

* Vide Sydenhami Opera, Dissertatio Epistolaris.

mucilage, however, a small quantity of oil, and more especially the *oleum ricini,* may be made to incorporate with water, so as to form a glutinous and convenient vehicle for the exhibition of more active substances, such as the *vinum opii,* the *extract of hyosciamus,* and the *liquor acetatis plumbi.* A solution of the *argentum nitratum,* in different proportions, may advantageously supply the place of all the other metallic salts, usually prescribed as the means of lessening inflammation.

When the pain is urgent, and the violence of the symptoms great, Mr. Wardrop has proposed the evacuation of the aqueous humour by puncturing the cornea. The testimony which I have to offer on this subject, goes more to establish the safety than the expediency of the operation. I have more than once had repeated recourse to the operation in the same eye, but at the same time the very necessity for its repetition has proved the effect to be less decisive than seems to warrant its adoption; and I have seldom ever performed it, where I might not with equal propriety have had recourse to it again. From the irritable state of the inflamed eye, it is often troublesome to accomplish; and in some cases, where the timidity of the patient has prevented the completion of the operation, instead of finding any bad consequences to ensue on relinquishing the attempt, the patient never failed to express as much sense of relief as if the instrument

had actually penetrated the whole thickness of the cornea. In some cases I have observed a greater resistance to the instrument than is usual in the healthy cornea: in one case the point of a cornea knife was broken in the attempt, and the patient experienced great relief, although the operation was not completed. It seems necessary to observe, that in an inflamed state of the eye the cornea knife is preferable to the needle, which has been recommended for the purpose of evacuating the aqueous humour, some degree of inflammation being liable to follow the puncture made by the latter instrument; and whenever the operation is performed, it is advisable to use a common lancet or a cornea knife.

Until the disease has manifested an evident tendency to exhaust its action in the structure of the cornea, we cannot be too watchful of the state of the iris, on the slightest affection of which, along with the means of subduing the external inflammation, it will be necessary to combine the operation of those which insure the safety of the part. For this purpose the extract of *hyosciamus* will be found an advantageous substitute for the belladona, the effects of the latter being precarious wherever there is much inflammation of the proper structure of the eye. The property of influencing the contractile power of the iris probably belongs to a greater number of vegetables

than we are aware of; the *euphrasia*, or eye-bright, as well as the *anagallis arvensis*, male pimpernel, would appear to possess it in a degree by no means inconsiderable. In the early stage of the disease blisters are of little service, and should never be applied nearer the eyes than behind the ears or on the back part of the head. In cases where an intolerance of light remains, along with copious lachrymation and quickness of pulse, after the violence of the disease has been subdued, much assistance may be derived by exhibiting the digitalis internally. This and every other plan of treatment requires for its success, more, perhaps, than that of any other disease, to be assisted by the patient, in resisting his appetite for every species of stimulating diet, and of limiting the quantity of the most simple to a measure far short of what will constitute a full meal; occasional purgatives will also be required, even when the disease is unconnected with any affection of the abdominal viscera.

Ulceration of the Cornea.

Having taken a view of the symptoms attending inflammation of the cornea, we come next to consider the morbid changes which take place in consequence of that action. The first effect of injury done to the cornea is, an increased vascular action, in that part of the sclerotic coat

nearest to the seat of the injury. The change in the state of the cornea then proceeds in the same way as if it had originated from primary sclerotic inflammation, which forms the basis, if I may so speak, of the action going on in the cornea itself.

Ulceration of the cornea is a very frequent consequence of purulent ophthalmia, which is to be considered as an external source of irritation, while the nature and progress of the ulcer depends on the support which it receives from the vessels of the sclerotic coat. In this way the cornea may become the medium by which a combined action of the conjunctiva and sclerotic coat is induced. The ulceration of the cornea, whether induced by the nature of the discharge from the conjunctiva, or from the extension of the inflammation to the external lamella of the cornea, is accompanied by a corresponding action in the vessels of the sclerotic coat; the case then ceases to be one of simple conjunctival ophthalmia, and symptoms of sclerotic inflammation commence, as those of ophthalmia abate. When ulceration thus takes place, in consequence of purulent ophthalmia, it commences on the external surface, and gradually deepens and enlarges, till it penetrates the whole thickness of the part. When it is the effect of a violent and primary sclerotic ophthalmia, it commences by apparent apostemation in the sub-

stance of the cornea, whence ulceration proceeds, either inwards, so as to terminate in hypopion, or in an external ulcer.

The cornea of all animals having palpebræ is composed of three distinct parts: externally it is covered by a thin membrane or pellicle, which various appearances of disease prove to be a continuation of the conjunctiva. The central lamina is composed of a cellular transparent substance, possessing a very low degree of vitality. The third, or internal layer, is membraneous like the first, but much thicker and stronger. It belongs to the class of serous membranes. If the cornea of an ox is placed between the finger and the thumb, by moving one upon the other we are made distinctly sensible of the existence and relative densities of these three laminæ, the yielding nature of the central one enabling the other two to move in opposite directions; and on dissecting them, we find the internal one capable of resisting a much greater force than the other two. When a pointed instrument is introduced through the two first, a considerable addition of force is required to make it enter the third, otherwise it glides along its surface without penetrating deeper. Disease demonstrates these successive layers in the human eye in a manner equally satisfactory.

The first general law regarding the morbid changes which take place in the substance of the cornea is, that until the effect of an injury done to the cornea is propagated beyond its circumference, and until inflammation is there excited, it retains its natural insensibility. If no such inflammation takes place, the ulceration is conducted by the serous vessels, without producing any visible signs of inflammation to the observer, or any pain to the patient.

The external covering of the cornea is so extremely thin, that the progress of ulceration cannot be there recognized; and the loss of substance if confined to this part, may be considered rather as an excoriation or abrasion. Sometimes it is elevated in the form of a papula, or pustule, communicating with a plexus of vessels on the conjunctiva, and attended with high irritation. It is not unfrequently attacked by a disease, which consists in a number of small circular excoriations, which as fast as they heal in one place appear in another, accompanied by a low degree of sclerotic inflammation, and often combined with tinea of the tarsi, and a scrophulous diathesis, and of which we shall have afterwards to speak.

In consequence of the excoriation of the external tunic, a hard, white, shining crust is sometimes formed on the denuded surface of the mid-

dle lamina. This effect is somewhat more alarming in appearance than in reality, for it often occurs when inflammation runs high; yet it is rather a favourable consequence than otherwise, as it appears to be an effort of the part beneath to supply the loss of the external membrane. It is often of considerable extent, and follows the shape of the excoriation which it occupies, and its edges are therefore for the most part ragged and irregular. It remains long stationary, even when the inflammatory symptoms are great, and seems to present a powerful obstacle in preventing the ulcerative process from making farther progress into the middle lamina, it is often tedious in its removal, but leaves no opacity behind, an event which always takes place when the middle lamina becomes the seat of ulceration, and which it is therefore in all cases an object of much importance to prevent. When the increasing violence of the disease disposes the crust to be absorbed by the progress of ulceration, a dusky yellowness, arising from a deposition of lymph, is sometimes discernible beneath; and as the ulcer proceeds, the crust wholly disappears, or is confined to the margin; or it may happen that the ulceration, beginning at the circumference, leaves a portion of the crust remaining in the centre.

In the treatment of this affection, from what has been just said, any attempts to remove this crust must be injudicious in the extreme; and I have seen, in several cases, the most unfortunate consequences attend the application of caustic.

Occasionally ulceration of the cornea commences by the simple abrasion of the surface, at other times the external coat is thrown off in the form of a white pellicle or thin slough, and an ulcer appears beneath, varying in its condition, according as it is disposed to heal or to deepen and enlarge. The ulcer when disposed to heal becomes clear and pellucid; but when about to enlarge, a considerable obfuscation surrounds it, or extends over its surface.

In the case of a rapidly spreading ulcer, accompanied by a profuse purulent discharge from the whole surface of the conjunctiva, I think that I have once or twice observed a copious secretion of fluid pus from the surface of the ulcer also, without any apparent discoloration of its surface. I may, however, have been deceived by a general oozing of matter from the surface of the eye. Of this fact, as already stated, I am certain, viz. that fluid matter never forms within the substance of the cornea, whatever may take place on the surface of the ulcerated parts, and the use of this knowledge is highly important and available.

When appearances would lead us to suppose that a collection of a yellowish fluid has taken place between the laminæ of the cornea, if laid open it will always be found to consist of a tenacious substance, which appears to partake of the nature and properties of effused lymph; the tenacity of this matter prevents its being readily thrown off, and if not removed, indelible opacity is always the consequence. During the healing process, it receives vessels from the adjoining cornea with which it finally incorporates in the form of leucoma, and thus preventing the reproduction of transparent cornea.

Whenever this matter or slough is removed, which for the most part can be done, the ulcer, however deep and extensive, will fill up without leucoma being the consequence. The sloughy substance may present itself, as I have before said, either extending from the edge of an ulcer into the unexposed cornea, or it may take place in the middle lamella of the cornea, previous to any ulceration, and present the appearance of an abscess; or it may spread over the ulcer itself, giving it the appearance of a white slough. By a little address, it may, in most instances, be removed in a mass upon the point of a lancet, or a couching needle, an operation which may be accomplished with such delicacy as will prevent the patient from feeling the slightest degree

of pain, a circumstance very necessary to insure its success, as any resistance on the part of the patient is incompatible with the delicate application of the instrument which the case requires. The formality of an operation should, therefore, as much as possible be avoided. When this effused lymph has a communication with the side or edge of the ulcer, it may be wound round the point of the instrument in such a manner as to enable the whole mass to be withdrawn. The part for some time after has a slightly opaque bluish appearance, from which it gradually recovers. When the whole of the slough cannot be removed, slight scarifications so effectually assist the part in throwing it off, as to occasion a reproduction of transparent cornea. When the slough covers the surface of an ulcer of considerable extent, great caution is required in applying the instrument, as there probably remains nothing but the third tunic to confine the aqueous humor. The blade of the needle or lancet should, therefore, be applied almost parallel with the slough. If it cannot be removed, we must be satisfied with slightly scarifying and dividing it. I have seen the cornea not only recover its transparency after two-thirds of its extent had been in this state, but have repeatedly procured a transparent cicatrization after the second and even third attack of inflammation, followed by ulcer and slough.

The observation with respect to fluid matter never forming in the cornea, I have invariably found true in cases where the whole eye-ball has been destroyed by inflammation. In several cases of men previously deprived of vision I have seen apparent apostemation of the whole cornea take place, accompanied by that prodigious enlargement of the globe of the eye, which causes the palpebræ to be hid by the portrusion of the swollen conjunctiva to the size of an egg, the cornea resembling a ripe yellow abscess in the centre, but no fluid will ever be found to follow an incision.

The appearance of ulceration varies according to the degree of apostemation or tendency towards it on the surrounding cornea. Whenever it is clear, it is doing well, and when obfuscation comes on, it is on the increase. The soft middle lamina is destroyed with great rapidity, when the accompanying inflammation is violent, but as soon as the ulcer reaches the internal coat, its progress in many cases proceeds no farther. When ulceration has commenced, the patient often experiences less violence in the recurrence of the pain, which has accompanied the previous stage of the inflammation, whether it has been in or above the eye, or in some more distinct part of the head; and he now complains of one more constant though less severe, and which he usually

compares to the pricking of a needle in the eye itself. The shape and size of the ulcer depends on the extent of the lymph deposited, or on that of the abrasion of the outer lamella, it proceeds to enlarge or diminish according to the degree of inflammation present, previous to healing, it gradually loses any ragged or angular outline it may possess, as might be presumed from the general appearance of those opacities which are of a strictly leucomatous nature.

The instant that the ulcer penetrates the inner coat, the aqueous humour escapes, and if the ulcer is situated within the line of the iris, an immediate approximation of that body to the opening takes place; sometimes it appears to incline forward, even before the aqueous humour can be positively said to have made its escape; and from this simultaneous adhesion of the iris with the cornea, the event has been termed procidentia iridis; but as the discharge of this fluid is less evident, it is more probable that in such cases actual perforation has taken place, and been again filled up by the adhesive process, which when the opening is very small takes place in a space of time inconceivably short. By the inner membrane thus giving way, and again uniting, the water of the anterior chamber sometimes percolates for the space of one or two days. This only occurs, however, when the ulcerated orifice is small,

and most commonly when it is situated beyond the pupillary margin, in the centre of the cornea, beyond the line of the iris. If a second rupture does not in this way destroy the adhesion of the inner membrane of the cornea, it immediately or very soon, i. e. in a few hours, projects in the form of a vesicle. The size of this increases in a corresponding ratio with the loss of substance which the ulcer may have occasioned in the middle and outer laminæ. If the tumor enlarges very much, so as to occupy a large portion of the cornea, it is termed staphyloma; and the same term should be given to its more limited formation, for in both cases the process is entirely the same. It is probably from not believing that the large staphylomatous tumors can have so small an origin as the vesicular projection that appears after the escape of the aqueous humour, that has made authors silent on the subject of its first formation. Indeed, neither the origin nor the progress of this affection has been properly described in any work I have yet read.

An ulceration of the cornea, proceeding inwardly, produces a conical cavity, of which the internal opening is the apex; the membrane of the aqueous humour has therefore a less extent of injury to repair, and its power of reparation being greather than the laminæ above it, its union is soon completed. But as the repro-

duction of the aqueous humour takes place before any perceptible progress can be made in the reparation of the exterior laminæ, the necessary consequence is either a second rupture of the newly formed part of the inner membrane, or if it has acquired sufficient strength to resist distention, it is protruded through the opening of the external laminæ. If the ulcer is situated in the centre of cornea, and is so small as not to extend to the edge of the iris, the inner membrane projects in the form of a transparent and conical vesicle, the apex of which does not at first appear to exceed the natural plane of the sound part of the cornea. If the perforation has taken place within the limits of the iris, an immediate adhesion of that part with the inner circumference of the ulcer takes place, the pupil is drawn to that direction, and by pulling the iris on the stretch, they display in a very beautiful manner the decussations of the pupilary circle, with the greater or external one. The contact of the pigmentum nigrum gives a a perfectly black colour to the point of adhesion, quite different from the colour of the iris insitu. The resemblance which incipient staphyloma bears to the head of the house-fly has obtained for it the name of *myocephalon*. As the vesicle increases, this black tinge disappears, and it acquires a bluish hue, whatever may be the colour of the iris.

If the opening through which the protrusion of the inner membrane has taken place is extensive, the pressure of the projection not only prevents its filling up, but causes a farther absorption of the surrounding cornea, and the staphyloma acquires a greater magnitude than might be expected on its first appearance. As an ulcer may, in by far the greatest number of cases, be prevented from penetrating the inner membrane by decided treatment, so the formation of staphyloma when not of such a size as to assume a spherical shape in a few hours after its formation, or which is not attended by an extensive slough of the cornea, or excessive purulency of the conjunctiva, may not only be prevented from farther enlargement, but may be entirely removed. If accompanied by adhesion, or what is called procedentia of the iris, that of course will remain with a corresponding distortion of the pupil, which, however, produces a less degree of imperfection of vision than might be expected. The staphylomatous vesicle on its first protrusion, is so exceedingly thin, that it is liable to be ruptured by the slightest application, even of a blunt instrument, an accident which is to be avoided as much as possible.

Before proceeding with the description of the changes and treatment of the more advanced state of staphyloma, I shall recapitulate the

general treatment of the ulceration and incipient protrusion of the membrane which lines the internal surface of the cornea.

First, the ulcerative process can only be checked when it is proceeding to destroy this membrane by those measures which are capable of subduing the inflammation on which the action depends. As long, therefore, as there is an appearance of activity in the disease, or recurrence of pain, local blood-letting by cupping or leeches must be steadily adhered to. The indication of the ulcer healing is easily seen in the diminished activity of the inflammation, relief from pain, and the clear aspect of the ulcerated part. The injection of vegetable tepid astringent infusions may be used, or milk and water only. When called upon in extreme cases where the immediate perforation of the inner membrane is threatened, we may with great propriety resort to the operation of puncturing the cornea, at a place as remote as possible from the ulcer; the operation being, I conceive, in such a case, fully warranted both by reason and experience. Next in importance to a diminution of the action on which the ulcer depends, is the removal by scarification of any slough thrown out, either on its surface or imbedded in the adjoining part of the cornea. Sometimes, but always subordinate to these indications we may add some topical applications to the ulcer, a

solution of nitrate of silver, the infusion of tobacco, or calomel in powder applied with a camel's hair pencil, may occasionally be employed with advantage. Thirdly, the application of caustic to the incipient staphyloma, or projection of the inner membrane, whether accompanied by procidentia iridis or not. In speaking of this, I must observe, that it becomes, altogether, a different remedy from the mode of employing it recommended by Scarpa, who directs it to be applied till a slough is formed, whilst an assistant keeps the eye fixed. Such an application, my experience would lead me to suppose would be fatal to the success of the remedy. It is quite sufficient that it barely and instantaneously touches the surface. By this slight application repeated daily, the incipient vesicle recedes, and the iris, though pointing forwards, attracted as it were to the cornea, is saved from any permanent adhesion. Caustic cannot come in contact with any moist part without leaving by solution a white mark, but this is all that it should be allowed to produce. If the caustic touches by accident the edge of the ulcer, or any part but the apex of the projecting vesicle, it will often produce much mischief. From one application too powerful I have seen the benefit of long previous successful treatment completely lost.*

* The very reverse of this practice is strongly urged by Professor Scarpa, but in this as in many other cases, which

When the membrane of the aqueous humour is found on examination, after rupture has taken place, to protrude so far as to assume a spherical shape, staphyloma may be considered as complete. In a short time it acquires such magnitude and extent of base as wholly to obstruct vision. For although very often it does not involve the whole of the pupil within the circumference of its base, yet the angle which it forms with the plane of the sound cornea, renders the reflection of objects too confined to make the remaining portion of the natural pupil of service. This spherical tumor on its first appearance, is of the greatest tenuity, and is liable to be ruptured by the slightest touch of any hard body; and although at a more advanced period it may be punctured without causing any pain, yet if ruptured by any accident at the time of its first appearance, the pain which occasion-

regard the medical treatment of diseases of the eyes, he has assumed premises which I cannot admit to be consistent with the true state or condition of the part. An observation which is forced from me, from the great weight which necessarily attaches to his opinions, both from the impressive mode of his reasoning, as well as from the accuracy which his anatomical and more strictly surgical researches have displayed. As this author is led to consider "ulcer as the cause of ophthalmia, and not ophthalmia as the cause of ulcer," the difference of practice recommended corresponds with that opinion; the British practitioner, I am persuaded, will discover that this, however, is but seldom the case.

ally succeeds is the most excruciating that can be imagined.*

The colour of the tumor is uniformly blue; as this is neither the colour of the iris nor of the sac, it is not easy to explain the cause on which it depends. At the more advanced stage of its growth, the sac may not only be punctured with impunity, but the evacuation of the aqueous humour which it contains is often required to relieve the pain which its distention brings on, especially in damp weather. In such cases the sac itself, when lying upon the blade of the knife or lancet, is perfectly transparent, and unconnected with the iris, while the water which it contains is the same in all its properties with that contained in the chamber of the healthy eye.

Although the staphyloma when completed should extend over two-thirds of the pupil, that portion of pupil which remains behind the sound cornea suffers no kind of distortion, and is capable of a small degree of contraction and dilatation, though for the cause I have already noticed it does not serve the purpose of vision. The iris adheres to the tumor at each side, and that portion of it which remains beneath the sound cornea, whether

* As a general observation this is correct; yet there are cases where the incipient staphyloma has been cut off with the scissars, with the happy result of disengaging the entangled portion of the iris.

it includes a portion of the pupil or not, takes the convexity of the natural cornea, but a sufficient quantity of aqueous fluid remains as prevents the consequences which would ensue from the actual contact of these parts; the fibres do not suffer that distortion which accompanies a more partial procidentia iridis, because, in the latter case, the iris is united to the centre of the part which the ulcer occupied; whereas, in a complete staphyloma, all within the base of the tumor is absorbed, a fact which I have had several opportunities of ascertaining by dissection. The only remains of the iris I found to be a few widely separated striæ of pigment on the internal surface of the staphyloma. With a staphyloma occupying more than two-thirds of the pupil, it is surprising how seldom the lens is displaced by falling forward into the cavity of the staphyloma. The iris adhering at each side of the tumor seems sufficient to retain this body in its place, and although the anterior chamber is wholly obliterated, the secretion of the aqueous humour is greater than in the natural state of the part.

I have frequently known a staphyloma on its first appearance to have an adventitious covering of an external membrane, of a dark grumous appearance, which when touched with the shoulder of a lancet bleeds profusely. This is

absorbed in a few days, when the staphyloma assumes the usual blue appearance: the drawing No. I, plate II, was taken from a case of this kind. When the tumor of the staphyloma has acquired its full growth, white bands begin to traverse it from one side to another; but between these it still retains its original thinness and blue colour. The parts which have become white are also thick, hard, and bleed when cut into. If it is necessary to evacuate the aqueous fluid, the puncture must be made in the interval between them. This white structure gradually extends over the whole tumor. Sometimes a small point of the original blue and membranous structure remains, by which the water occasionally escapes, and the puncture of which at all times produces a full evacuation of the aqueous humor.

The treatment of this affection has been regarded chiefly with a view to lessen the unsightliness of the tumor, for which purpose its removal by cutting off a portion of it, has been recommended by Professor Scarpa, whose own evidence, however, warns the reader of the severe inflammation and suppuration which are likely to ensue. There is, however, a much stronger objection to the operation, in the fact, that an eye affected with staphyloma, is not in so perfectly a hopeless state as it is but reasonable to suppose must be the case after such an operation as the

one alluded to. Nature attempts the cure in every case, and in many, brings it within the power of art to complete the success of her effort. While the process by which the thin membrane is converted into a white thick coriaceous substance is going on, the repeated rupturing of the parts which have not yet suffered this conversion diminishes the tumor, which, finally, contracts and subsides to the natural shape of the cornea, leaving an indelible leucoma over the place which it occupied. An artificial pupil may then be formed with the same favourable prospect of success, as in any other case of obliteration of the pupil from leucoma of the cornea.

The evacuation of this humor is often required to relieve the sudden and violent attacks of pain which its distention excites in the eye, or in distant parts of the head. Though I never measured the qnantity of water which escapes, I think, in some cases, it must have amounted to two drams. The incision heals immediately, and in a few hours the water is reproduced. I object, therefore, both to the removal of the apex of the tumor, as recommended by Scarpa, as painful and hazardous, besides being destructive of all chance of recovery ; and to the puncturing the tumor as an endless operation, from which no permanent effect takes place. I have had recourse with success to caustic and to the introduction of a seton in order

to accomplish the gradual diminution of the tumor, and to bring the eye into that state where an artificial pupil may be made; at all events, to destroy the deformity of the projection, without the risk of a severe attack of inflammation and suppuration of the eye-ball. Fig. 2, plate II, shows a spherical staphyloma in its advanced or leucomatous stage. Fig. 3 exhibits a case in which a staphyloma was successfully reduced by means of a thread carried through the tumor.*

Besides staphyloma, the cornea is liable to a very considerable alteration in shape, without any evident change of structure, taking the shape of a cone, which causes the greatest confusion in all objects seen through it. It is probable, that this affection may arise from some alteration in the strength of the coat of the aqueous humor, not succeeded or accompanied by any similar alteration of the outer lamellæ, and by which the cornea is rendered less able to support the contents of the eye, and according to the established laws of pressure will yield at the most centrical point, or it may be owing to a general loss of the elastic property of its whole substance. I am not aware that this affection has ever been either

* I have at this moment a case, in which by three applications of the caustic pencil, a very prominent staphyloma of long standing has been reduced to the natural convexity of the cornea, by the aqueous humor having gradually filtered away.

cured or relieved. In all my attempts to restore the natural convexity of the part, I have failed; evacuating the aqueous humor, removing the lens, and the application of long continued pressure have not been attended as far as I know with any improvement of vision. The complaint is frequently rendered still more hopeless by being complicated with a diseased condition of other parts of the organ.

The cornea is liable to a loss of substance, by a process of absorption different from any form, which that action assumes when combined with the more obvious signs of inflammation; the disease has been long known to oculists by the little danger which it occasions, and also by remaining without any change either for the better or for the worse; it appears in the shape of a pellucid dimple, and has been aptly compared to the appearance of a cut gem. From the great length of time during which it remains unaltered, it has been supposed, with much probability, to be owing to an interstitial absorption having taken place in the middle lamina, without an abrasion of the external one, I have seen it, however, in many cases become an open and active ulcer, terminating in a procidentia iridis; but previous to such an occurrence, an inflammatory action was always seen to commence in the sclerotic coat, at the

part nearest the ulcer. At one time, I found it a frequent occurrence in convalescents from purulent ophthalmia during a severe frost. I have also met with it in two cases, where the patient had laboured under small-pox a short time before, though without any appearance whatever of the eyes having been affected by the variolous pustule.

The ancients appear to have observed the various states of ulceration as it occupies the cornea with great attention, and designated their external differences by a variety of appellations,* the exact and original import of which is now somewhat uncertain: I have therefore avoided their introduction here, as a knowledge of words is too often mistaken for a knowledge of things, and because I have considered the various aspects of the ulcer as depending on the degree of the accompanying inflammation.

* Viz. *Argemon,* which would seem to refer to the peculiar white incrustation, described page 48.

Encauma, when the ulcer is attended by much slough and inflammation.

Bothrion and *Cœloma,* the pellucid excavation as above described, according as it occupies the centre or the external portion of the cornea.

Opaque Cornea.

There is another morbid condition of the cornea, which, although originating for the most part from the remains of a primary conjunctival ophthalmia, is necessarily connected in such a degree with an augmented determination of blood to vessels of the sclerotic coat, that it may with propriety be considered as a modified form of its inflammation, of which the previous disease of the conjunctiva is the exciting cause.

After the complete cessation of conjunctival ophthalmia, as far as regards that portion of the membrane which covers the eye, it frequently happens that the villous elongation of the vessels, of the palpebral linings instead of recovering their natural state, acquire, either by the operation of new sources of irritation, or from a morbid obstinacy in the part itself, a further increase of size, so as to produce a rough, scabrous or granulated surface, with a secretion of puriform matter. The irritation of this unequal surface gradually induces an inflammatory state of the sclerotic vessels, and, consequently, a greater flow of blood towards the cornea; the return of which by the vessels of the conjunctiva increases the loaded and debilitated state of that membrane; instead of the high degree of irritation which would take

place under the same circumstances in a healthy eye, the superficial vessels become varicose, the conjunctiva assumes a dusky and loaded appearance, the cornea becomes opaque, not partially, but throughout the whole extent of its structure. The affection now described is essentially different from those nebulous, or partial opacities which take place in primary sclerotic inflammation, and which consist in slight extravasations, accompanied by intolerance of light, and in which any affection of the palpebral linings is a secondary, instead of a primary circumstance. From every other form of opacity caused by cicatrization, the diagnosis is sufficiently obvious.* The term opaque cornea is, therefore, appropriated to a disease totally distinct from any partial obscuration, and in which the cornea resembles in appearance the green colour which is presented by the fracture of common gun flint: sufficiently diaphanous to admit the perception of light, yet too opaque to render external objects visible to the patient, excepting by their shadows, rendering it also impossible to ascertain the colour of the iris or to distinguish the limits of the pupil. The conjunctiva is sometimes so much relaxed, and its vessels so generally loaded, as to give it a similar dusky appearance; at other

* For the opacity of cicatrization the terms *leucoma*, *albugo*, and *albedo* may be indiscriminately used.

times, without much alteration either of its thickness or transparency, it loses for a considerable extent its close attachment to the subjacent lamina of the cornea, affording a clear demonstration of the continuity of the membrane with its external lamella. Along with the opaque state of the cornea, it is far more general, however, to find it accompanied by the enlargement of individual vessels, penetrating almost to its centre, increasing as they come outwards, and terminating in trunks, which run to the duplicature of the conjunctiva, carrying a dark coloured blood, and being distinctly of a varicose nature.

The active nature of the disease declines as the substance of the cornea becomes softened, and in the advanced stage of the disease small sloughs take place on its surface; these appear somewhat beyond the visible termination, or, to speak more correctly, the commencement of the varicose vessels, and are generally accompanied with, or caused by an increased distension of the nearest trunks; but it is rather the increase of venous plethora, than of any action which can be properly termed inflammation. The tone of the superficial vessels is, indeed, so much impaired, that they are incapable of affording that resistance which constitutes inflammation; being incapable of supporting an inflammatory action

of themselves, and any increase of that action which may take place in the deeper seated vessels, produces *vi a tergo* an engorgement of the varicose trunks. The eye, in such a state, affords an excellent field for observing the operation of stimuli; we find, that in the space of a few seconds, by a very slight irritation, the whole series of superficial vessels becomes highly injected, but without any of the pain or tension which an hundredth part of the enlargement would occasion in a healthy state of the part.

Our knowledge of the vascular system is still so exceedingly imperfect, that it is difficult to say at what part the arterial power is transmuted for that of absorption. From an attentive consideration of the phenomena of ophthalmic inflammation, I am led to believe that the conjunctiva is at all times the medium for the return of a large portion of blood, after its circulation in the more internal parts of the organ. The present disease may be considered as arising out of a loss of balance in the supplying and returning vessels of the cornea. The diseased state of the palpebral linings present, as has been already said, a source of irritation to the deeper seated vessels, while it equally retards, by its spongy and vascular structure, the superficial ones from unloading themselves of the congestion, which the

increased arterial action has occasioned. In cases of ill treated ophthalmia, the diseased surface of the palpebral linings is accompanied by eversion of the eyelid, the cure of which depends entirely upon a proper knowledge of the new circumstances which are caused by and kept up by the eversion, and the treatment of which will be more fully considered when viewed as a consequence of purulent ophthalmia; at present, I shall confine my observations to the disease of the membrane as connected with opaque cornea, which takes place as the more remote consequence of preceding ophthalmia; and where the gradual recovery of the palpebral linings has been prevented, by neglect of cleanliness, the want of pure air, or the various sources of irritation, both general and local.

This disease of the palpebræ consists at first in a highly villous state of the membrane, which, if not treated by appropriate remedies, gives birth to granulations, which in the process of time become more deeply sulcated, hard or warty; along with the villous and fleshy appearance of the linings of the eyelids, there is a general oozing of purulent matter, which may at any time be squeezed out by pressing the finger on the part. The diseased structure is highly vascular, and bleeds most profusely when cut into; it possesses, as all granulated surfaces do, a very great power of growth or reproduction; I have

seen many cases in which it has been removed, with more zeal than discretion, twenty or thirty times successively, without this disposition to reproduction having suffered any diminution, while the effect of the operation is too often, as I have elsewhere stated, decidedly hostile to the ultimate recovery of the part; a new surface is produced of a bright velvety appearance, much less susceptible of cure than the original disease, and which even, if at length healed, does not assume the natural appearance of the part, but, as might be expected, that of a cicatrized surface; and it is also worthy of remark, that even when the cicatrisation has been at length accomplished (I speak from experience, and not from an undue prejudice against the operation), it is not attended with the renewed transparency of the cornea, which uniformly and invariably ensues when the disease has been cured without destroying the natural surface of the eyelids.

In the whole class of diseases of the eye and its appendages, there is no one affection so distinctly pointed out, and its treatment so uniformly described by all antient authors, as this state of the linings of the palpebræ, termed by the Greek writers,* *trachoma and sycosis*, from the granular

* Trachoma asperitas intra palpebram, est hujus intentio, ut velut incisuras habeat sycosis, a ficus similitudine vocatur,

appearance of the surface, by the Latins *scabies* and *scabrities palpebrarum,* and by the Arabians *sebel.**

So completely, however, had such knowledge been overlooked in this country, that the real nature, as well as the cure of the complaint, may be considered as a recent acquisition; and we have seen the most unworthy claims set up as to the merit of introducing both the one and the other. The use of actual cautery, excision and friction, for the purposes of curing the diseased state of the eyelids, may be traced back to the writings of Hippocrates, and seem to have been employed both separately and combined. The destruction of the granulations by friction appears to have been the practice more generally followed in former times. The adoption of the more preferable mode of practice, by the application of escharotic agents, may, I think, with justice be conceded to Mons. De St. Ives; this author, whom I have not consulted till lately with that attention to which he is so well entitled, appears

ubi vero diu duravit, et callum contraxit tyosis, id est callositas nominatur, si non his cedat inversam palpebram per pumicem rademus aut per sepiæ testam, aut fici folia, aut etiam per instrumentum *blexharoxyston* ab hac opera appellatum.

* Qum palpebra inversa est interius apparet rubra et aspera, et scabies adest, et cum super alba oculorum et super nigredinem, videtur similitudo panniculi ex venis rubris et crassis texti adest passio quæ vocatur *sebel. Rhases in Regem Almanzorem.*

in his own country, and at the distance of exactly one hundred years, to have performed a similar service to surgery, which, in our time, has been conferred upon it by the late Mr. Saunders, whose high qualifications and talents have now so successfully established the cultivation of ophthalmological science among us.

As a striking instance of the sameness with which the various revolutions of human knowledge is attended, and how much present times resemble those that are passed, I may quote the certified opinion of M. Petit prefixed to the treatise of St. Ives; its application to the present moment is by much too striking.

"Among the several *oculists*, who have written in our days, some have only given us a catalogue of *operations*, which they tell us they have performed, without describing them; others have made a collection of *letters*, written in their praise; they boast of their knowing many *secrets*, which they reserve to themselves. 'Tis evident, they have nothing in view but their own private interest; neither do their writings deserve to be regarded but as mere *advertisements*."*

Mr. Saunders took an early and just view of the relations existing between the diseased condition of the palpebral linings, and the opaque state of the

* Signed Petit, *vide* St. Ives' Treatise, translated by Stockton.

cornea; he further succeeded in establishing the cure of the latter, by the removal of the former, and had he lived, there is every reason to suppose that he would have left but little room for further improvement. The operation for excision in the case, which more especially establishes his claim to the discovery of the nature of the disease, appears to have been attended with complete success. Nor do I mean to say, that in most cases, some temporary relief will not be afforded by the moderate use of excision and scarification, though at the same time I take upon me to affirm, that of itself it is, for the most part, inadequate to the cure of the disease; and that there are very few cases in which the more certain and consistent process of gradually repressing the diseased surface by escharotic substances, will not produce a more perfect but also a more permanent cure. General principles would at any time have deterred me from attempting the cure of such a surface by the knife; and in the present case its inefficacy would have been proved to my entire conviction, by witnessing cases in which the operation had been cruelly and uselessly persisted in, in order to remove the state of granulation, accompanied by eversion, as I stated in an account of ophthalmia written in 1806. In my first attempts to effect the cure of the disease of the palpebræ, as combined with the opaque cornea, I had,

therefore, immediate recourse to the aid of escharotic substances. After giving a fair trial to a great variety of this class of medicines, applied to the surface of the upper eyelid, in the form of ointment, I was led to trust to their application in substance alone, by which the treatment became so decidedly successful as to enable me to calculate with certainty on the cure of the disease, when not opposed by moral obstacles which no means could controul.

Having succeeded in bringing the treatment of this affection to the greatest degree of precision, it was with no small degree of surprise, that I learnt for the first time, in March 1812, that an offer had been made by an oculist in civil practice, to the Commander-in-chief and to the Secretary at war, to communicate as a discovery a method of curing the disease. A representation of the successful mode which I had adopted, I considered sufficient to ensure it a fair trial, with any other which might be proposed; and more especially, as I was able to support it against the treatment by excision, from the experience I had already acquired of the inefficiency of such an operation. I also endeavoured to make the comparative merits of the treatment by excision, and that by escharotics, apparent, by reference to cases of such diseased surfaces, as might be more familar to those on whom I supposed the decision would naturally and officially devolve.

The defence, however, which I made of a treatment so susceptible of proof, and so capable of demonstration was unavailing. The disease was asserted to be of a nature to be cured at once, by an operation, and to the charm of an operation every thing else was forced to yield, though it is seldom that we find any person who prefers being cured himself by an operation when more lenient means can suffice.

As the excellence of modern surgery is not less conspicuous in the disuse of operations, in many diseases, than in the amelioration of those which it retains, the present has always appeared to me such a retrogression from the best ascertained principles of surgery, that it never could have received the trial which has been given to it, if left to the unbiassed decision of the profession; and when time shall have removed all personal consideration, the mode of practice which succeeded with me will maintain its reputation, when that by excision will be left without an adherent. I shall here recapitulate what I have elsewhere advanced with respect to the effect of excision.

First, that of itself the operation, however frequently repeated, is unequal to the cure of opaque cornea; while, on the other hand, the treatment I adopted in the disease, does not require the aid of an operation in one case out of fifty.

Secondly, that the operation, besides being in

itself very painful, requires to be indefinitely repeated, and is often followed by inflammation; while the treatment by the properly graduated application of caustic substances, produces neither pain nor inflammation.

Thirdly, in many cases where a new and white surface has been obtained, after the repeated use of excision, the cornea often remains vascular, a circumstance which never happens when the cure of the membrane lining the eyelid, has been effected by the action of escharotics, properly applied, the cure of the cornea invariably keeping pace with that of the membrane.*

Lastly, the claim of Sir. W. Adams to an improved method of treating this disease, as announced in a circular letter of the Right Hon. the Secretary at War, is limited to the use of a knife in place of the scissors, as employed by the late Mr. Saunders; to this novelty, if such it can be called, the objections now urged apply with tenfold force.

The connexion of the disease of the cornea with that of the lids, and the eversion of the latter for treatment or examination, was practised by Mr. Saunders, who taught it to Sir W. Adams, and was resorted to by myself without any knowledge of the practice of Mr. Saunders, or the

* *Vide* Observations relative to the Treatment of Ophthalmic Cases of the Army.

existence of Sir W. Adams; though I did not then, nor do I at this moment, consider the eversion of the eyelid to be generally necessary to the cure of the disease, its frequent repetition has appeared to me not only unnecessary but prejudicial; and I have met with more success by simply raising it with the thumb of the left hand, so as to admit the application of a small porte crayon armed with the blue stone or nitrate of silver, than I ever did by the complete eversion of the palpebræ; nor will I yield the evidence of my own sense and experience on this point, to any conjectural reasoning whatever. The treatment of this affection forms but one feature of a disease, which at the time that I met with it, was new to the profession in this country, and although the practice proved successful to the utmost possible degree, it has been condemned without inquiry and without appeal, and in a quarter where professional discussion cannot be entertained.

The whole power of high and official patronage has been employed to ensure the success of the operation for removing the granulation of the palpebræ by the knife; the failures have been concealed by every possible subterfuge; nature, however, has proved her superiority, and it is now generally known that the operation, while it has been highly injurious in some cases, has only proved successful when aided by those ap-

plications which it was introduced to supersede, and this success has been so limited, as to prove that their use is not yet properly understood, where the greatest pretensions have been advanced. Had it been my fortune to have adopted a mode of cure by means of a very painful operation, and another person had pointed out to Government, that the same thing might be done without any pain or suffering to the patient, I should have deemed the proposal to be worthy of support, and adoption; and if, after a fair trial, it was found an effectual substitute for such an operation, I would have willingly and cheerfully acquiesced in such a preference; the plan, however, to which the Right Hon. the Secretary at War has given his official patronage, being just the reverse of this position, the measure must for ever remain at variance with public expedience, and a just consideration of the welfare of the class of sick to whom it applies.

The successful treatment of the opaque state of the cornea, must in all cases depend upon the attention which is given to the two indications which have been mentioned, *viz.* an increased action in the vessels of the sclerotic coat, and the more external affection of the palpebral linings. The first of these is accomplished by lessening that degree of activity in the state of the vessels, incompatible with the successful treatment of the second; this will generally be found easily done by taking away blood

from the temples by cupping. Where there is any threatening of slough, the application of a leech to the inner surface of the lower eyelid, will greatly accelerate the removal of the inflammation. During the whole progress of the treatment, the patient ought carefully to abstain from every thing likely to promote a determination of blood to the head, *caveat a coitu et vitet iram, clamorem, rixam nec ferat aliquod strictum circa collum.** Great limitation of diet I have always found an essential part of the treatment; and whenever the patient has fortitude to resist the indulgence of his appetite beyond the prescribed limits, his recovery may be considered as certain.

A great variety of substances has now been proposed for the cure of the palpebral surface, I am not aware, however, of any that are more effectual than the two which I originally selected, and to which I have trusted in the great majority of cases, these are the *sulphas cupri* and the *argentum nitratum*; for their proper application they require to be pointed in the form of a pencil, and fixed in a portcrayon as already mentioned; in this way they are to be applied, not as some have conceived, with the view of producing a slough over the whole surface, but with great delicacy, and in so many points only as will produce a gradual change

* Avicennæ Opera.

in the condition and disposition of the part. The formation of slough implies a consequent action, in order to throw it off, which by increasing the activity of the sclerotic vessels, increases in fact the proximate cause of the disease. Such an application as this view of the subject contemplates, may for the most part be accomplished without everting the eyelid, the frequent repetition of which retards very much the progress of recovery: for besides exposure to the air during the time of eversion, the part is in a state of strangulation. Nor is it at all times necessary that the escharotic should be applied to every part of the diseased surface, for when a healthy action recommences it soon becomes general.

As long as any purulency remains, the above applications will be much aided by the daily use of the undiluted *liquor acetatis plumbi.* When the disease resists these remedies, and we find the surface hard and warty, I have had recourse to the finely levigated powder of verdigris, or of burnt alum, applied to the everted surface. In employing these, and every other remedy, we must confine their operation to the point of contact, to prevent them from producing any excitement of the vessels of the eye; it is therefore, necessary to apply them in very minute quantities with a fine camel's hair pencil, and carefully wash them off before returning the eye-

lid. This is most easily done by means of the elastic gum syringe. In such cases the *kali purum* may also be substituted for the argentum nitratum, taking care to apply it very lightly to the more prominent parts of the diseased surface. These few and simple observations are sufficient to ensure the successful treatment of the complaint.

It is easy to understand, that with a very limited number of substances, a great variety of effect may be produced by the degree and manner of applying them. Neither blue stone nor the nitrate of silver, are to be regarded as escharotics, but as powerful astringents; and it was experiments made on the membrane of the mouth and gums, that first determined my choice of the former as possessing the proper degree of astringency, to render it serviceable in acting upon the diseased state of the palpebral surface: and it is in this light, that I consider it an efficient remedy in the cure of the disease; applied only in a few points, its astringent effect is soon extended over the whole surface without causing excitement in any other part; and in this way I believe it to be more successful than by its more forcible application.

As there appears still to exist, among those who have given a trial to escharotics for the cure of opaque cornea, an inclination to aid their

operation by the use of astringents in a liquid form also; it is necessary to advert to the impropriety of such a mode of treatment, which is in direct opposition to the indications on which the cure of the disease must depend. Any solution capable of exerting a certain and an evident impression on the diseased surface, must be too high a stimulus to be applied to the more healthy part of the membrane which covers the eye, while the solution of an astringent substance, though capable of stimulating the vessels of the sclerotic coat so as to increase the quantity of blood sent into the cornea, cannot in any way promote the cure of the disease of the palpebral linings. Such remedies, therefore, without possessing any curative tendency, produce the same prejudicial effects which result from accidental sources of irritation.*

The liquor acetatis plumbi,† already mentioned,

* The substance of what I have here stated, is comprized in a short tract, printed at the express desire of the late Mr. Weir, then director of the Army Medical Board, and presented officially to that board, and to high official persons, in the months of March and April 1812.

† When undiluted, it merely occasions a sensation as if sand or gravel had got into the eye; this feeling does not continue above twelve minutes. When diluted, it often causes much heat and smarting. I was induced to try the effect of digesting the oxide of the metal in vinegar, without boiling them together

is the only substance which I know that possesses by its astringency a beneficial effect upon the palpebral surface, without exciting any hurtful consequences as a stimulus; but even this is more applicable to the worst stage of the disease, in which, the whole of the membrane of the conjunctiva is more thickened than in health; as the cure proceeds, it may be changed for the solution of alum, such at least was the usual hospital practice which I adopted. On the other hand, objections have been raised to the use of escharotics, evidently without a right understanding of their general effects, and in utter ignorance of the manner in which they ought to be employed, for the cure of this disease in particular; the reasons urged against their application in substance, because they are deleterious in solution, afford a proof of the truth of what I advance too manifest to escape the lowest capacity.

The excision of a portion of the conjunctiva, which immediately surrounds the cornea, has been strongly recommended by Professor Scarpa, and on his authority, at an early period, with respect to the treatment of this disease at the hospital, for the cure of the ophthalmic cases of the army under

according to the directions of the Pharmacopœia; the effect of this composition was much less beneficial, and was complained of as much more painful.

my directions, a fair trial was given to it, but without any good effect, excepting in cases of great relaxation of the membrane covering the eye. The division or excision of the large varicose trunks, which generally unite towards the external angle of the eye, has little or no effect, as new vessels immediately appear in the room of those removed by the operation, and the discharge of their contents does not compensate for the slight degree of excitement which their excision occasions; if at any time it is an object to lessen the quantity of venous blood, it is better accomplished by removing the surface of the granulations with a pair of curved scissars, which I have always maintained to be the utmost useful extent of an operation, for the introduction of which such extraordinary measures have been resorted to.*

The prognosis in this disease is always favourable: the more completely the cornea has become soft and opaque, the more easily is it cured; though if the patient's age is much above twenty, he is for some time liable to a relapse. Sometimes it is accompanied by a nebulous affection of the centre of the cornea, the consequence of primary sclerotic inflammation, and a nebulous opacity in that situation is always difficult to cure. Of itself, the opaque cornea, as I have already mentioned, is a

* Vide Appendix, Nos. 1 and 2.

disease of a compound nature, which gradually resolves itself into a more simple one; in its early stage we have to contend against some prevailing activity in the vessels which supply the cornea, as well as to remove the diseased state of the palpebral linings, which prevents those which have already lost their tone from recovering their natural dimensions. The activity gradually wears off, the dilated vessels somewhat recover their power, and at this time art can be rendered more directly available, because there is then only one principle to be acted upon instead of two.

CHAP. III.

OPHTHALMITIS IRITICA VEL SCLEROTICA INTERNA.

THE affection which we are to consider under this head, may be referred to the general character of rheumatic inflammation, as opposed to the phlegmonic form of that action, which we have described as terminating in the structure of the cornea.

Taking the term rheumatic inflammation for the present, rather in an abstract, than in its more specific application; it may be considered as evincing an inferior degree of acute action, and consequently more indefinite in its duration, and while less formidable on account of its immediate violence, it becomes an object of equal interest by the disposition which it has to extend itself to the iris and neighbouring structures; and although inflammation in these parts is seldom disposed to go beyond the limits of adhesive formation, it proves in this way no less destructive to vision.

The adhesive process may, however, commence in the iris as a primary affection, while the redness of the sclerotic coat appears secondary or symptomatic; but in either case,

the formation of iritis is so blended with a modified inflammation of the sclerotic coat; that it is impossible to separate the consideration of the one, from the other. It has been already shewn, that when an injury is done to the cornea, it produces no symptoms of acute inflammation, until such an action is excited in the vessels of the sclerotic coat. In the same way and to the same extent, we may observe the same relation to exist between the latter part, and the more internal structures of the eye. Injury done to the iris by accidental or artificial wounds of its substance, excites no disturbance in the part or uneasiness to the patient, and will eventually heal without any troublesome symptoms, if inflammation does not appear in the sclerotic coat also, but in that case, by a reflected action, the structure of the iris is liable to be destroyed with all the signs of active and acute disease. Iritis when it takes place, which it so often does, without any external exciting cause, may, unless sclerotic inflammation comes on also, eventually destroy vision, by the progress of the adhesive action, without giving the patient any further warning than what arises out of the gradual loss of function. The instant, however, that the sclerotic coat reddens the progress of the primary affection, is accelerated and accompanied by the usual signs of acute disease

According to authors, the only true idiopathic iritis, is that which takes place in consequence of accidental or artificial wounds inflicted immediately on the part, and I shall first consider it as combined with that degree of sclerotic inflammation, necessary for its evolution as an acute disease.

The causes which have the most frequent share in producing this form of sclerotic inflammation, are precisely such as might be expected to make this part the principal subject of attack: of these a prevailing pre-disposition to rheumatic inflammation, gout, and syphilis are the chief. The resemblance which the structure of the sclerotic coat bears to that of tendinous expansion, necessarily disposes it to take on the same form of diseased action to which such parts are subject. The translation of rheumatic and arthritic inflammation to this part is, therefore, consistent with the habitual tendencies of both these diseases. From a certain kind of congenital connexion, which seems to exist between the colour of the iris and that of the skin, we might also expect, that when inflammation of the eye is connected with that of the skin (which it so often is), that the iris would in such cases be the primary seat of attack; yet in instances both of variolous and morbillary inflammation of the eye, I have always found it disposed to assume the external or corneal determination.

Inflammation of the sclerotic coat, with a disposition to attack the iris, is a frequent occurrence while the system is under the influence of mercury, and when there is at the same time every reason to believe that the constitution is free from any syphilitic taint; on the other hand, the specific efficacy of mercury, in checking the progress of the same form of inflammation, being an ascertained fact, there is some difficulty in explaining two such opposite effects, and notwithstanding the scientific, ingenious and practical view which has been taken of the question by two authors, whose authority I value most highly, it has not yet been explained in a manner sufficiently clear to suppress all doubt on the subject.

It is contended for by Mr. Travers,* that the sound state of a part presents the same distinction to a diseased part, as the opposite states of disease do to one another; and that as two morbid, but contrary actions, may go on at the same time, and be excited by the same cause, so there is nothing incompatible with the power of mercury to produce that effect in a healthy eye which it is capable of obviating when excited by another cause.

Dr. Farre considers mercury as effecting a change in the action of the arterial capillaries,

* Vide Surgical Essays, vol. i.

producing thereby a state directly opposite to that of adhesive inflammation, and by very satisfactory evidence establishes the propriety of resorting to the use of mercury in the early stage of inflammation, against which practice a common prejudice has generally subsisted; as an exciting cause, however, of the inflammation of the iris, which is so decidedly of an adhesive character, I do not find the easy solution of the difficulty which I conceive is afforded by the actual circumstances which seem to be necessary to give origin to this inflammation.

Inflammatory action I have always been disposed to regard as arising out of an excitement of the arterial capillaries, which, in consequence of a want of a corresponding energy of function of the absorbing veins, occasions distension and consequent reaction in the former, out of which arise the phenomena which we call inflammation; the redness, swelling and pain, are referrible to distension; increased heat, to that increased action which distension creates; the act of blushing, and the distension of the cells of certain structures by the influence of the passions, are so many illustrations of the effect of stimuli being confined to the arterial capillaries, without exciting a corresponding action in the veins; but here the temporary nature of the exciting cause suffers the distension to terminate before reaction

can take place. Mercury has the effect not only of increasing the action of the arterial capillaries, but in a remarkable manner of promoting a quickened action in the extremities of the veins also, stimulating and rousing, beyond any other agent, the whole course of the absorbent system* under the mercurial influence. The various functions of life are performed at an accelerated ratio, and hence the specific efficacy of the remedy in all cases of venous remora, by restoring an equal balance to the circulation. In as much as the operation of mercury disposes the extremities of the veins to accommodate themselves to the increased action of the arterial capillaries, in so much it prevents these latter from relieving themselves, by the effusion of lymph, while it equally enables the absorbents to remove what may have already escaped. In proportion, as the functions are excited beyond their natural standard, any sudden check given to the mercurial influence will necessarily interrupt the balance which it has established in the state of the circulation, raised at the same time, be

* That the use of mercury materially aids the absorption of venereal virus into the system, when it would otherwise produce only a local disease, is now admitted; when given at all, it should, therefore, be persevered in until it has enabled the system again to expel the virus which it has absorbed; the small quantity of mercury given by some practitioners to secure the system, as they say, is, no doubt, the fertile cause of constitutional symptoms.

yond the natural standard. According as the operation of the interrupting cause is general or local, the effect will be a state of general fever or topical inflammation. Rheumatic inflammation is, therefore, at all times easily excited, when the system is under the influence of mercury; and that which appears in the sclerotic coat can be considered in no other point of view, than as a variety of that species of inflammation; nor is this the only instance in which the effects arising out of the sudden check given to the mercurial influence, have been ascribed to the direct effect of the remedy itself.

The erythema which has been found to occur under the use of mercury, instead of being the immediate effect of the mercurial action, is only produced when that action is suddenly suppressed, by which the force of the increased action is suddenly thrown upon the arterial capillaries; and the obvious cure of this disease, as well as the more topical form of ophthalmic and other rheumatic inflammations, consists in the speedy restoration of the mercurial action, having first removed the distention of the vessels, by the common means of antiphlogistic treatment.* In

* Of this disease in its inveterate form, I have seen in all five cases: three of these are described by Doctor Spens, in the first article of the first volume of the Edinburgh Medical Journal, and they are, I believe, the first recorded; being at

the cases quoted by Mr. Travers, the operation of cold as the exciting cause seems abundantly made out, and to its efficacy the author indeed appears inclined to attribute much of the disease; and although it is true, as he has remarked, that we seldom meet with ocular inflammation, when mercury is resorted to for the cure of internal complaints, it is also to be considered, that in

that time physician's assistant, it was my duty to draw up the cases of these individuals, and to attend to the progress of their symptoms. In the case of Frazer, the complaint was evidently produced by want of protection from the inclement state of the weather; Harper attributed her attack of the disease to having been employed in washing the day previous to the attack. Donaldson, the first and most protracted of these three cases, was using mercury in the hospital, for the cure of chancre, when he was attacked with fever, followed by the erythematic eruption; the mercurial action in this case appeared to me to have been superseded by the contagion of influenza, which had seized most of the patients in the same ward, and the erythematic complaint was preceded by sickness and prostration of strength, which marked the accession of the epidemic; this patient recovered under the exhibition of mercury, which was resorted to after many other remedies had been tried. The two other cases were in Guy's Hospital, where I went purposely to ascertain the point in question. One of them ascribed the disease to his having risen out of bed in a profuse state of perspiration, for the purpose of closing a window; he had been taking mercury for about three weeks. The second had incautiously taken off his coat while at work, by which perspiration was suddenly checked: had taken mercury for only eight days.

such subjects the disposition to assume inflammation is greatly diminished by the nature and duration of the constitutional disease, and in general the patient is not subject to the same exposure to atmospheric influence which the frequent concealed use of mercury, for the cure of recent syphilis, occasions, leaving the chances of a rare disease wholly in favour of the last description of patients; and, upon the whole, there seems no better reason for ascribing inflammation of the eye to the direct operation of mercury, than in any other rheumatic affection that may occur under the same circumstances.

A further argument, adduced as evidence of the tendency of mercury to occasion this form of disease which it so successfully arrests when produced from other causes, is inferred from the frequent appearance of iridial inflammation in the sound eye, while the operation of mercury is opposing its progress in the one originally diseased; this seems, however, only an example of the peculiar sympathy which exists between the eyes, by which inflammation, though seldom confined to one, never advances equally in both; and however successfully we may oppose the inflammation set up in one, it is no security whatever against its extension to the other. The appearance of iritis, while the patient is under the

influence of mercury, is only a demonstration of this general law.

True rheumatic ophthalmitis bears a near analogy to that inflammation which is so liable to seize on parts lying immediately under the skin, and of a tendinous structure.

The commencement of the inflammation shews the same general appearance we have already described, consisting of a zone of inflamed vessels surrounding the cornea, while a more leaden hue of the surface of the sclerotic coat, and the want of disposition to encroach upon the cornea, chiefly indicate the more internal course of the disease. The blood vessels of the conjunctiva form a delicate network over those of the sclerotic. The pain is of a stabbing and lacerating kind, darting to the temples and jaws, often observing complete intermissions, increased by warmth and accompanied by *epiphora* especially when exposed to cold air.

The intolerance of light is less troublesome than in corneal inflammation, and as the disease extends itself more and more into the iris, this symptom instead of increasing, sensibly diminishes. In this we find an exact analogy between the eye and what occurs with regard to sound in inflammation of the ear; as either organ becomes less sensible to its specific stimulus, it is disturbed by the internal perceptions which accompany inflammation of

these organs. In iritis, the patient, as he sees external objects less distinctly, and becomes less sensible to the impression of external light, fancies that he sees sudden flashes of ignited bodies, which he even mistakes for real existences, in the same way that inflammation of the ear, while it blunts the perception of external sounds, is attended by continued noise produced in the organ itself. In the worst cases of this inflammation, besides the tendency of the disease to attack the iris, and the neighbouring parts, it is liable to cause such a change in the structure of the sclerotic coat, that it can no longer preserve its regular spherical form, but suffers a partial projection in some part, more than another, known by the name of *staphyloma sclerotica*.

The effects of the inflammation on the more internal structures, will be considered under the respective heads of cataract and amourosis, at present it will be sufficient to trace the disease, as it proceeds under the form of iritis.

If the inflammation as above described, is suffered to maintain itself for any considerable length of time, an increasing, but regular contraction of the pupil, and diminished mobility of the iris begin to shew that the inflammation has extended to this part also. The pupil for some time preserves its circular shape; the smaller ring of the iris becomes sometimes of a red, but

more frequently of a lighter colour; the greater ring takes a greenish hue; as the pupil contracts the margin of the iris shews some little irregularities; the pupil itself loses the shining black appearance, which it has in health; the vision becomes sensibly impaired in consequence of the inflammation having extended to the capsule of the lens. The inflammation of the sclerotic coat, continuing to increase, the iris now swells, pushes forward, and presents a convex surface towards the cornea; the sensibility to external objects diminishes, while the patient is distressed by imaginary flashes of light or the appearance of ignited bodies. As the pupil becomes more and more angular, a grey ash coloured membrane appears to come forward from behind the border of the iris, which forms a medium of adhesion between its pupillary margin and the capsule of the lens; there is reason, however, to believe that this effusion takes place on the posterior surface of the iris, long before it is visible at its margin, and that it is the efficient cause both of its altered colour and contracted motion. Under the progress of such changes it seems almost useless to observe, that the sight becomes more and more impaired, and at last the eye becomes insensible even to the presence of light. As the iris pushes forward towards the cornea the latter loses its healthy appearance. If the disease is

still suffered to proceed, one or more small tumors of a dark orange colour appear on the surface of the iris, which eventually terminate in suppurations; and while the matter which they contain falls into the anterior chamber so as to produce hypopion, adhering portions of flocculent membrane, being the remains of the cyst which contained the matter, are seen floating in the aqueous humour. The hypopion not unfrequently conceals a great portion of the iris from farther observation, but it is rapidly absorbed as soon as active measures are resorted to for the cure of the inflammation.

Unless the inflammation is rendered particularly violent by being the consequence of a wound, or hurried on to suppuration by some constitutional disease, it terminates in the effects which belong to the adhesive stage. The formation of adhesive membrane, according to its extent and situation, produces the various appearances of dilated, contracted, or obliterated pupil, all of which may be variously complicated according as the inflammation has affected the deeper seated structures. A permanently dilated state of the pupil, may be owing to no other cause, than the adhesion of the greater ring of the iris, to the lymph upon its posterior surface, or to the capsule of the lens, *Mydriasis a synechia.* It more frequently, however, happens, that a dilated state of the pupil is associated with some corres-

ponding disease of the choroid coat, or perhaps the membrane lately described by Dr. Jacob of Dublin, as lying between it and the retina, which will render the mydriasis a species of amourosis; on which account, in forming our prognosis and in weighing the measures necessary to prevent a farther loss of vision, we must take other circumstances into consideration, besides what the more visible signs of inflammation may suggest. An extension of the disease to the deeper seated parts of the eye, requires more active treatment than when its symptoms are more openly declared.

A more frequent consequence of iritic inflammation is the extension of the iris in an opposite direction to the one just mentioned, in consequence of the lymphatic membrane advancing on the surface of the capsule of the lens towards its centre; as the iris follows the extension of the new membrane by a regular progression the pupil becomes gradually smaller, the pupillary margin of the iris is drawn forward at different points, and as there is generally one more advanced than the rest, the pupil is dragged more or less from the centre of the eye. The expansion of the lymphatic membrane over the capsule, constitutes an important variety of false cataract, which, when viewed through a magnifying glass, appears to be well supplied with vessels,

* Vide Philosophical Transactions for 1819.

and often terminates in true capsular or lenticular cataract: and it, therefore, happens, that complete closure of the pupil is generally accompanied by true cataract.

If the accidental causes of inflammation are applied to a patient affected with constitutional symptoms of syphilis, or when inflammation of the iris occurs with the first class of secondary symptoms, the disease assumes an acute form, and is attended with those exacerbations which characterize syphilitic inflammation in general; in the early stage of such a case, the sclerotic inflammation exists for some time, before any alteration takes place in the appearance of the iris. The sclerotic inflammation is often attended by a particular dazzling appearance of the eye, so striking, as to be observable at a considerable distance. When, instead of the first or exanthematous stage of constitutional syphilis, there is a discrasia more or less marked, inflammation of the iris is liable to appear in the form of adhesive action, which occasions no uneasiness, until the sclerotic coat becomes inflamed also; when this occurs the progress is alike in both cases; there is some little diminution of the natural transparency of the cornea, which appears as if distended by an increase of the aqueous humour. The iris becomes gradually less moveable, the pupil contracts, and places itself towards the inner angle; first the less, and afterwards

the greater ring change colour ; the pupil becomes angular, the iris begins to press up against the inner surface of the cornea. Conjoined with these appearances, there is an irregular *intolerantia lucis*, which increases towards evening, and at last, there comes on a fixed pain in the head, chiefly confined to the eyebrow. This commonly begins in the evening ; it becomes more and more violent towards midnight, and diminishes as the morning advances, when the patient enjoys some hours of repose. After every such attack of pain, the pupil appears more contracted and more displaced, the iris more changed in form and colour, and the effused membrane more apparent behind the border of the pupil, sending threads forward to the centre of the anterior capsule. Lastly, small red or orange coloured tumors, appear sometimes at the pupillary, sometimes at the ciliary margin, which eventually suppurate.

Iritis with a primary inflammation of the sclerotic coat is not a very unfrequent effect of gout in irritable subjects. Before any actual appearance of inflammation takes place, the patient has his attention called to the part by various unusual sensations, which are followed by a sharp pain extending over the eye, and which seems to arise from the supra orbitary hole ; the eyelids are put into constant and quick motion ; their edges give out a thickish cream coloured secre-

tion; the sclerotic appears reddened, but does not propagate its inflammation to the border of the cornea, but according to the observation of professor Beer, leaves a narrow bluish white ring around its edge, which can only be observed in the early stage of the attack, as the space is filled up by the vessels of the conjunctiva, which form a vascular network, becoming more and more varicose with the progress of the inflammation; the pain is inconstant, increased by every change of temperature, and especially when the patient covers his head with warm cloathing. When the inflammation of the sclerotic coat is thus fully formed, the common appearance of iritis comes on, but the pupil, remains in its natural position behind the cornea; this, with the bluish ring at the edge of the cornea, and subsequent varicosity of the vessels of the conjunctiva, form the chief diagnostic symptoms between syphilitic and arthritic iritis; the pupil as in the syphilitic disease becomes narrower with every attack of pain; the lymphatic membrane spreads rapidly; the pupil closes; all sensibility to light is lost, and the eye often falls into a state of atrophy, and is drawn back into the orbit, but without losing the traces of its former organization, and still liable to the recurrence of pain. The iris very often, in the commencement of arthritic iritis, contracts itself; in which case, the pupil does not

widen equally, but rather towards the angle of the eye; and especially the outward one, the iris becomes almost invisible, and the pupil oblong; in this dilated state of the pupil, there are often appearances which depend upon actual cloudiness of the vitreous humour, a dark green colour being observable at the bottom of the eye; sometimes the lens forms into green cataract.

The increasing convexity of the iris, and its consequent approach to the cornea, according as the new membrane cuts off the communication between the chambers of the eye, affords an unequivocal proof, that the source of the aqueous humour is behind the iris; and as the blood there parts with its colouring matter, in order to form the uvea, its residuum may probably undergo some further change, by the action of the vessels of the ciliary processes, previously to its separation as a distinct fluid.*

Treatment.

In the treatment of these several species of inflammation, the safety of the eye depends upon

* In assigning to the ciliary processes the office of a gland, I was not aware that Dr. Young had already supposed that this might be their use, if the production of the aqueous humour required such an explanation. As the secretion of the fluid after closure of the pupil proves that it takes place behind the uvea, this destination of the ciliary processes is rendered very probable.

the vigilance and decision of the practitioner; if he be satisfied with relieving symptoms as they occur, he will lose the only opportunity of acting with effect, and it is, therefore, of the very first importance, that active treatment be persisted in until the disease be completely subdued. Whatever may be the state of the general health of the patient, the importance of the organ at stake must counterbalance all objections to such a use of depletion as the case may require; whether the disease may or may not be conducted, through a tedious prolongation, and by other means, to a successful termination, is an issue too doubtful for experiment. Taking blood by cupping from the temples, and repeating the evacuation so long as any inflammation appear either in the sclerotic coat or in the iris, is not only effectual in itself, but insures the efficacy of the other means which experience has pointed out as proper for the purpose of opposing the disease. A small quantity of mercurial ointment with opium rubbed into the eyelid and temple, night and morning, seems to have a specific agency in arresting the progress of the disease in the iris; the same may be said of the local use of stramonium and hyosciamus, which not only prevent the contraction of the pupil, but after the removal of inflammation, appear very evidently to increase the mobility of the iris, by disengaging it from

the adhesions it has formed with the capsule of the lens.

If the disease have occurred during a course of mercury, we may renew its exhibition with safety and advantage. In most cases it is prudent to take away some blood from the opposite temple, after having relieved the organ attacked by the inflammation. When the iritic affection is evidently connected with other symptoms of constitutional syphilis, it would be hazarding too much to trust in such a case to the local application of mercury alone; as, in all other cases of inflammation of the eye, the recurrence of pain should be invariably regarded as an indisputable and unequivocal symptom of augmented inflammation, I would recommend the nocturnal pain of syphilitic ophthalmia to be considered in this light, without any regard to the specific nature of the case beyond the necessity of combining the use of mercury with free local depletion.

The general treatment must be decided by the nature of the predisposing cause of the disease, if gastric derangement appear connected with rheumatic inflammation, we must endeavour to restore a healthy condition to the chylopoietic functions; and it very often happens in protracted cases of rheumatic inflammation, that the operation of an emetic cuts short the disease in the eye. As the state of the alimentary

canal and the healthy secretions of the parts connected with it are now regarded, in this country, with the attention which is due to their importance, and to the frequency of their derangement by the artificial habits in which we live, it seems needless to enlarge upon the subject in this place.

In arthritic and syphilitic iritis, the general treatment must be regulated by the specific nature of the diseases; in the former, professor Beer recommends the friction of the region of the eyebrow with opiated liniments, and he advises as the only safe topical applications soft cushions of light dry aromatic herbs, with or without camphor, and of a moderate warmth; blisters applied behind the ears, issues or setons formed at the nape of the neck are eminently useful, to which the author above quoted adds friction on the spine with tartar emetic ointment.

Combined with depletion and the local applications which have been enumerated, I have generally had recourse to a free use of digitalis, and I am inclined to regard it as a powerful auxiliary in the treatment of sclerotic inflammation.

CHAP. IV.

ON LENTICULAR AND CAPSULAR INFLAMMATION.

Opacity of the lens and its capsule, *Cataract, Suffusio, Hypochyma,* forms one of the most frequent causes of blindness, and has been an object of attention from the earliest period of medical record; but as the removal of the disease, when fully formed, can only be accomplished by a manual operation, its investigation has been more than any other left unattempted by pathologists, from an indolent confidence in those who confine their attention to the diseases of the eye, or to this one in particular. The result of delivering over so important a disease to the exclusive management of eye operators has been, that, excepting the occasional light thrown upon the nature of the disease by men distinguished in the wider paths of medical science, very little of actual knowledge has been added to the subject since the days of Celsus and Galen. Of late years, the study of this disease has advanced with the general knowledge of pathology, both in this country and on the continent; the successive changes produced by inflammation and absorption have been ascertained

and made subservient to the more successful treatment and prevention of the disease.

Inflammation, as the cause of cataract, has been chiefly brought into view by the researches of the ophthalmologists of Germany, where symptomatology has been long cultivated with a degree of study and diligence scarcely equalled in any other country. For the knowledge which we possess of the power of absorption, existing in the surface of the cavity of the aqueous humour, we are indebted to the observation of own countrymen; and especially to Mr. Saunders for its scientific application to the cure of cataract; for although, Pott, Scarpa, Richter and Hey, have severally advanced the operation by absorption in the adult, the perfection of the operation and its successful application to a state of infancy are, exclusively, due to the labours of Mr. Saunders.

Besides the inflammation which gives a frequent origin to cataract, the lens is subject to a more acute and destructive form of inflammation which, in distinction to the more gradual loss of transparency terminating in true lenticular and capsular cataract, may be termed *lentitis*. Cataract exemplifies the adhesive process of inflammation, this the suppurative; in the latter the lens, instead of remaining in the form of cataract, endeavours to remove itself by the process of

ulceration, which however successful, as it regards the removal of the lens, is incompatible with that integrity of the organ necessary for the purpose of vision.

The lens when attacked by the suppurative form of inflammation, which I have seen take place without any evident cause, gives out a tenacious ropy matter; which, by exciting inflammation between the iris and the cornea, traverses the anterior chamber; it then produces the ulcerative process in the cornea, and finally reaches the external surface without losing its continuity with that portion of the lens which still remains *in situ* until the whole be discharged, scarcely exciting any disturbance in any other part of the eye. The escape of the aqueous humor is, in a great measure, prevented by the protruding portion of this ropy filament which will bear considerable stretching without breakiug its continuity with the remaining portion of the lens. This is to be considered as an extreme case of inflammation; in its more common form, it never proceeds beyond the adhesive stage, of which the capsule is the primary seat.

The transparency of the lens and its capsule, and of the vitreous humour and the hyaloid membrane, depends upon an exact balance between the supplying and returning vessels by which they are

nourished and renewed;* they are consequently liable to a loss of their transparency and natural structure when this balance is interrupted by too great a force in the one or diminished activity of the other; the first takes place combined with general inflammation of the eye, or by a more obscure action of the vessels of the part, a state of disease which has been particularly pointed out by Professor Walter of Berlin, and which may be considered as laying the foundation of almost all cases

* That a vascular connection between the lens and its capsule exists cannot be doubted, its nourishment by imbibition is neither supported by proof, nor analogy, while all its pathological relations sufficiently shew that it is subject to the laws of vital action, as exemplified in the effects of inflammation and decay: in both these affections, it bears a striking resemblance to the structural changes of the teeth. These depend upon the membrane which enters the canal of the roots for whatever degree of vitality they possess, and they suffer by the changes, which in common with all vascular parts, it must necessarily undergo. Besides inflammation and consequent caries of the teeth, we find that the vitality of the tooth is lost as the osseous canal diminishes by age, affording an obvious parallel to cataract of old people. The excruciating pain occasioned by inflammation of the membrane of the tooth and the insensible progress of capsular inflammation, are exactly what might be expected from the circumstances of their relative structures with respect to pressure; the inflammation of the one taking place in a situation which admits of no expansion, while the other is free from all external pressure which might oppose or aggravate the inflammation.

of capsular cataract which occur after birth, and finally that of the lens.

Although the precise nature of the connection which exists between the lens and its capsule is yet unknown, yet we may safely infer, that true lenticular cataract may be produced by a loss of power in the absorbing vessels, the source of which must be sought for in the capsule; this organic change, in a structure so delicate as the lens, seems a natural consequence of the rigidity of fibre incident to age. Various causes promote and accelerate the formation of true lenticular cataract, and the same causes will, in some persons, produce a capsular or inflammatory cataract, while, in others, they hasten the formation of true lenticular cataract. An hereditary disposition to cataract, has been found in all the varieties of the human race. Excessive exertion of vision in youth, will often give a predisposition to the formation of cataract in the advanced period of life, or the effects may be more immediately perceived in the production of capsular inflammation. The formation of cataract is so liable to be connected with some particular diathesis or actual constitutional disease, that the prognosis to be given with respect to an operation must very much depend on the previous history of the patient, with respect to his general health, habits, or occupations. It is too

much the practice of oculists to recommend an operation without a due consideration of the constitutional causes of the disease, which, if still in action, must render the operation useless. I shall here briefly enumerate the several species of cataract, both as the product of capsular inflammation and as arising from age in decay.

Of Cataract.

Every obstruction of light, caused by an evident alteration of structure between the vitreous humour and the iris, has been called Cataract; the *glaucoma* of the Greeks, the *suffusio* of the Latins. From what has been already said, such an obstruction may arise from very opposite causes, and, accordingly as it occupies the lens or the capsule, it has been denominated true or capsular. It is generally a disease of slow formation, and its effects upon vision require to be minutely known, to prevent the incipient stage from being confounded with the early symptoms of amaurosis. The following diagnostic marks are chiefly insisted upon by Professor Beer: first, in cataract, all objects, especially white ones, appear involved in a thin cloud or mist; second, the vision diminishes in proportion to the visible cloudiness behind the pupil; third, the cloudiness shews itself most distinctly towards the centre, seldom at the border of the pupil; fourth, as the cataract increases, a blackish

ring is observable at the border of the pupil, especially in light coloured eyes; fifth, at first, cataract obstructs the vision of objects directly opposite to the eye, but when viewed sideways and in a moderate light they are discerned with tolerable clearness: sixth, dioptric glasses aid the vision of cataract patients, so long as the cloudiness behind the pupil is inconsiderable; the flame of a candle appears to an eye in which cataract is forming, to be surrounded by a whitish circle or vapour, which appears broader the farther the patient removes from the light; if the cataract be completely formed, the patient can no longer see the flame, and can merely say where it is; lastly, incipient cataract does not influence the mobility of the iris, if, at last, its movements are impaired, the complaint is by that time sufficiently obvious. On the other hand, the appearances, which characterize the formation of amaurosis, are the great depth at which the cloudiness appears behind the pupil on looking at the eye sideways, from the cloudiness appearing somewhat concave, from its colour being more of a greenish or reddish hue; the diminution of vision bears no proportion to any perceptible cloudiness; the pupil is more or less expanded, the iris little or not at all moveable; the pupillary border angular, and the pupil not perfectly circular; the cornea loses its natural and healthy aspect.

In incipient amaurosis, there is also a remarkable increase or diminution of vision, not affected, as in cataract, by the degree of light or expansion of the pupil, but depending on physical and moral causes, affecting the sensibility of the individual; violent emotions of mind often giving a temporary increase of vision, while it is evidently diminished by long fasting, restless nights, great anguish, sudden fright, or excessive venery; under the operation of such causes, incipient amaurosis often terminates in permanent blindness. To the amaurotic patient, the flame of a candle appears as if involved in a mist, but, unlike the white cloud already described, exhibits as well as the flame itself the colours of a rainbow; glasses are of no use to the amaurotic patient, and he distinguishes objects at the side with as much difficulty as those directly opposite to the eye.

The first important distribution of the different forms of cataract is into real and false. Every visual obstruction which exists in the posterior chamber, between the vitreous humor and the uvea, must lie either within the boundaries of the capsule of the lens, or between the anterior capsule and the uvea. When opacity occurs in the first situation, it is called real or true cataract, and in the latter, false cataract, depending upon the presence of some adventitious matter; the first is a primary diseased appearance, the latter

arises from previous and more extended inflammation.

True cataract is again to be subdivided into lenticular and capsular; the first begins in the centre of the lens itself: for the most part it exhibits a dark grey colour, with a tinge of yellow, and remains darker in the centre than at the border of the pupil, even when the whole has become opaque, so that the cloudiness appears to diminish gradually towards the border of the iris, where a darkish ring may be observed, and which proceeds from the shadow of the cataract. The growth of this cataract is very slow; it has no influence upon the expansion or contraction of the iris, and even when completely formed, is not altogether destructive of vision.

As the patient continues to distinguish many objects when presented laterally or in the shade, or when the pupil is artificially expanded, this cataract, commonly, remains at a considerable distance from the iris, the space of the posterior chamber is, therefore, very distinctly seen, the form of the cloudiness is more or less convex, and without spots.

Capsular cataract, a term sometimes mistaken for the membraneous or false cataract, seldom begins in the middle of the pupil, but in one or more points towards its border, in the form of white shining streaks or spots; its colour,

though clear, is never uniformly deep, and it more or less influences the motions of the iris; this cataract seldom remains long without some opacity of the lens taking place, which may easily be comprehended from what has been already said on the connection of the lens and its capsule. Cataract of the capsule may be confined to the anterior or posterior half, or both hemispheres may be opaque. I shall briefly enumerate the several varieties as distinguished previously to an operation.*

1st. Anterior capsular cataract is a frequent disease, though it seldom continues long without inducing an opacity of the lens also; when it has become perfectly formed it attracts notice by its clear grey colour, studded with white shining spots, like chalk, or mother-of-pearl; as the capsule is thicker than in its sound state, it diminishes the posterior chamber, and sometimes even pushes itself close to the uvea, when the motions of the iris are considerably impaired, and vision is reduced to a mere sense of the presence of light.

Cataract of the posterior capsule is comparatively a rare affection, and is quickly joined by opacity of the lens, and can therefore seldom be seen when fully formed; in its early stage, it is to

* It would not be easy to comprehend how one half of the capsule could remain permanently cloudy without the other, if we did not know that they were supplied by different vessels.

be distinguished by a whitish grey colour, partially distributed, but without the clear pearly white spots which appear in the cataract of the anterior capsule; we can, however, clearly discern, that the cloudiness behind the pupil is concave, and as long as the lens does not participate in the disease, the patient is able to distinguish objects with considerable accuracy, especially with a magnifying glass.

Perfect capsular cataract presents the usual appearances of the anterior capsular cataract, and the extent of the disease is not always ascertained before the operation. The iris is, for the most part, very immoveable, in consequence of the cataract pushing up against the uvea, and it often requires artificial expansion of the pupil to convince us that a union has not taken place between these parts. Another form of true cataract has been called the *cataracta morgagniana*, which, however, very seldom exists by itself, being quickly followed by opacity of the lens and capsule; it is described by Professor Beer as of a blue milk and water colour, the whole pupil appearing cloudy; but the clouds alter their form or outline when the head is moved quickly, or when the eye is rubbed by the finger through the eyelid, the posterior chamber is much diminished, but the patient discerns objects of magnitude with tolerable ease.

True capsulo-lenticular cataract is the most frequent form of disease, and consists of many sub-species and varieties.

1st. As characterized by various configurations of the anterior capsule, this cataract attains a very great size, and generally comes close up to the uvea, partly of a chalk white colour, and partly like mother-of-pearl, disposed in layers, the latter being larger and lying higher than the former; the iris has very little perceptible motion, contracting and expanding very slowly. Although the pupil remain perfectly round, the posterior chamber disappears, and even the anterior is somewhat diminished by the size of the cataract pushing the iris towards the cornea. This form of cataract has been subdivided into species or varieties, as the *cataracta capsulo-lenticularis marmoracea,* in which chalk-white stains predominate;—*fenestrata,* when these cross one another, so as to leave interstices of a darker colour;—*striata,* when the streaks of the anterior capsule concentrate in the middle of the pupil;—*centralis,* when it consists of a single elevated spot in the centre, the rest of the capsule and the lens remaining tolerably transparent, with the exception of a pure white spot in the centre; this cataract Professor Beer says, he has observed in children soon after birth, and that it has remained unaltered during the whole period of life;—*punc-*

tata, when several elevated spots appear over the surface of the anterior capsule ;—*dimidiata* when one half is white and slightly elevated. According to the appearance assumed by this lymphatic deposition, different names have been given to it ; as *traberculαris,* when it passes across the pupil like a beam ; *pyramidata* when a conical projection rises from the centre of the anterior capsule, projecting into the anterior chamber. In all these varieties, and indeed in almost all kinds of capsular cataract, the lens is found more or less soft or fluid, while the external appearances depend upon the thickening of the anterior capsule.

II.—*Cataracta capsulo-lenticularis cystica* is characterized by its pure white colour approaching close to the uvea, and receding from it, according to the position of the head, and in time becoming tremulous. On the nature of this cataract, Professor Beer remarks, that it is liable to be produced by violent concussions, or to exist as a congenital disease, and that in such instances he has found the capsule a full line in thickness ; the lens itself is dissolved into a watery or milky fluid, the quantity of which is never equal to the bulk of the solid lens. In this cataract there is an evident loss of adhesion between the capsule and the neighbouring parts, even when the tremulous motion is not very evident, as the whole cataract

springs out as soon as an adequate opening is made.

III.—*Cataracta capsulo-lenticularis siliquata,* so called from the tough husky state of the capsule, the cataract of infants so ably described in the posthumous work of Mr. Saunders; this cataract may be congenital, but is more frequently formed soon after birth, and is also met with in adults. The state of the lens and capsule varies at different stages in consequence of the partial absorption of the lens; the experience of Professor Beer confirms the inferences so ably drawn by Mr. Saunders and Dr. Farre; he describes the lens, even in children, to be much diminished in size and sometimes scarcely perceptible, the capsule tough and shrivelled; this diminution of the lens is now understood to be the effect of absorption, which leaves the two layers of the capsule almost in immediate contact with each other. This cataract, there can be little doubt, is the effect of obscure inflammation most probably excited by exposure to a strong light soon after birth. In adults, it may originate in consequence of wounds or concussions of the eye; it will often appear at a considerable time after the blow of a whip on the eye, or the rebounding of any hard substance upon the cornea. There is, generally, much loss of adhesion between the capsule and the neighbouring parts.

Professor Schmidt says, he has generally observed it in children and young persons who have been subject to convulsions in their childhood, and he ascribes its formation to this cause; Beer, with more propriety, considers the cataract and convulsions to arise from the same source of irritation, as it is often met with when no appearance of convulsion has ever occurred. In children, cataract has a light grey whitish colour, and is seen at a considerable distance from the pupil. In adults, it is of a more dazzling white, rather flat than convex; it is at a distance from, and does not affect the motions of the iris.

IV.—*Cataracta capsulo-lenticularis, cum bursa ichore continente*, known by a dark lemon colour, indolent iris, and diminished posterior chamber, for the most part occurring with a cachectic habit of the individual; the matter is contained in a cyst between the lens and posterior capsule, and has been often extracted entire along with the capsule by Beer and Schmidt.

False Cataract.

I.—Adherent cataract, contracted vision in consequence of a new formation between the uvea and the lens, is generally the product of preceding inflammation, which has had its seat more or less in the iris and the capsule of the lens, and is therefore frequently associated with some degree of cap-

sular cataract. The patient bears evident marks of previous inflammation, by the diminished size and angular appearance of the pupil; vision is lessened in a greater degree than is accounted for by the extent of the new membrane, in consequence of some further injury occasioned by the inflammation. As has been already observed, the lymph which has been thrown out by the inflammation has a delicate cobweb appearance; sometimes there are opaque spots on the capsule, without any general loss of its transparency, but with the vision very considerably impaired. The pseudo membrane may sometimes be seen organized with red vessels, if viewed through a magnifying glass.*

II.—Another species of false cataract is occasioned by a portion of the tapetum of the uvea becoming detached and laying itself upon the anterior capsule; this is almost always the consequence of violent concussion, occasions a great diminution, and a very uncertain degree of vision; unless the eye be examined in different lights and in different positions, and with the assistance of a magnifying glass, the detached portion of the

* I may here observe that the most complete *autopsia* is obtained by making the patient examine his own eye by means of a small metallic reflector, with a circular aperture in the centre with this the motions of the iris, and the state of the pupil can be seen in a truly beautiful manner.

uvea may escape observation. In giving a prognosis in every case of impaired vision after a blow, we must keep this accident in our recollection; if the patient be young, it may sometimes disappear without being detected; in more advanced periods we cannot hold out any such expectations, if the accident is followed by inflammation or dislocation of the lens, it will be accompanied with some appearance of organized lymph, as in the first species of false cataract.

Besides the various appearances which cataract exhibits, accordingly as it occupies the lens or its capsule, another important classification arises from the degree of consistence under which it exists. As a knowledge of this must have great weight in determining both the operation and the modifications of its several manipulations, I shall recapitulate such appearances as mark the probable condition of the disease with regard to consistence.

1st. Hard cataract is, for the most part, of rather a dark colour, and at a distance from the pupil; the motions of the iris are free, and the vision tolerably distinct when the pupil is expanded. These are the symptoms of true lenticular cataract already described, which is the only perfect species of hard cataract; it is chiefly met with in slender persons, who after a youth of temperance enjoy a vigorous old age; the lens is often much

wasted, and what remains is nearly as hard as wood, of a chestnut brown colour, and flattened on the sides. This is evidently the effect of rigidity, or the diminished capacity of the absorbing vessels.

2d. *Cataracta nigra.* This cataract is often mistaken for incipient amaurosis, but is ascertained by dilating the pupil.

Soft or cheesy cataract has for the most part a greenish white or light greenish colour, with great privation of sight and indolent iris.

Speaking generally, we may say that in young people, in cases of capsulo-lenticular cataract, the lens is soft; yet as true lenticular cataract is not always hard, even in very old people, so the cataracts of young persons are not always soft; when cataract forms under any marked constitutional affection, it is, for the most part, soft or cheesy.

3d. *Fluid cataract.* This being always joined with perfect opacity of the capsule is, in general, not discovered with any certainty before the operation. Congenital cataract is always fluid at first. In *cataracta cystica,* already described, the quantity of fluid is not in proportion to the natural size of the lens. In fluid cataract, generally speaking, the size of the cataract is larger, instead of being smaller than the natural lens.

Of the Complications of Cataract.

The adhesion of the capsule to the uvea is seldom difficult to recognize, for the pupillary border of the iris is not perfectly round; it is not only more angular, but the cataract lies quite close to the uvea; the motions of the iris are more or less indolent, and when the adhesion occupies considerable space, they are even wholly lost; the sensibility to light is very indistinct, such preternatural cohesions being always the product of a preceding internal inflammation, which, besides the opacity of the lens and capsule, may have produced other essential changes in the retina, and the coat of the vitreous humour. We can ascertain the extent of the adhesions of the anterior capsule by the artificial dilatation of the pupil; but those of the posterior capsule with the coat of the vitreous humour, or of the capsule with lenticular cataract, especially if combined with considerable adhesion of the anterior capsule to the uvea, can only be recognized during the operation; other local complications of cataract are recognized much more easily, *viz.* as connected with anterior synechia, with a permanent contraction of the pupil without posterior synechia, with atrophy and with dropsy of the eye, with ophthalmia, and with natural spots and cicatrices of the cornea:

all these morbid states of the eye are so characteristic, that they cannot escape even the most careless observer.

Nor is a cataract joined with glaucoma difficult to detect; this cataract is always of a greenish colour, it is externally large, so that it presses through the pupil to the cornea; the colour of the iris is almost as much changed as after iritis, and is perfectly immoveable; the pupil is much dilated and angular, generally towards the angles of the eye, the smaller ring of the iris scarcely visible, because it lies concealed behind the soft protruding lenticular cataract; the sensibility to light is entirely wanting; on the contrary, there are frequent flashes of light in the blind eye; and lastly, this cataract seldom exists without more or less varicosity of the external vessels of the eye. Such a cataract for the most part appears after violent and long continued head-achs.

It is more difficult to ascertain the existence of incipient *synechesis*, or simple destruction of the hyaloid membrane, which forms a more frequent complication; yet if this morbid state of the vitreous humour, which unsuccessful operators find very convenient, be formed in any very great degree, the marks are very easily recognized; the cataract trembles, and the iris undulates backward and forward, with the least motion of the eye; the eye seems somewhat atrophical, it is quite

soft, and shews no resistance to pressure; the sclerotica immediately round the cornea, as in very young persons, is blueish, and the sensibility to light varying; if the synechesis be not complete, there is only a suspicious softness in the eye, and a slight wavering of the iris.

Another complication not less difficult to decide upon before the operation, is that with amaurosis; for although it may be easy sometimes to distinguish this complication, it is in many cases very difficult. When the pupil is very large, the iris is almost or altogether immoveable, and the person cannot distinguish day from night, and consequently still less the smaller variations of light; no power of divination is necessary, says Beer, to prognosticate with certainty the failure of an operation to restore sight to the patient; but if, on the contrary, the iris be nearly as moveable as in a sound state, the pupil as small as it ought to be in such a degree of light, if the patient can tell distinctly all the variations of light, and if the cataract, notwithstanding, be united to an amaurosis which deprives the patient of all power of vision except sensibility to light, it is only by a careful investigation of the history of the case, that we can find out such circumstances as point out a simultaneous amaurotic blindness: the other eye being affected with amaurosis but not with cataract, excites a well

grounded suspicion, that an amaurotic affection may be present in the cataractous eye also.

Medical Treatment of Cataract.

On the principles already stated with respect to the formation of cataract, the first practical distinction must be made between cataracts which form quickly and unexpectedly, and those which appear gradually and at an advanced period of life. In the former, there is almost always some degree of inflammation, which may either be idiopathic or symptomatic; in these cases we may at least retard or stop the progress of its farther formation by antiphlogistic treatment, and our decision with respect to an operation will be greatly influenced by considering how far the general health of the patient is the cause of the cataract; further than this counteraction or removal of the exciting causes, medical treatment can do nothing.

The operation of these causes in producing too great an action, or in obstructing the necessary change of matter in the delicate structure of the lens and capsule, has already been noticed; it may be here necessary to enumerate some of the more frequent, as their removal must form the first care of the practitioner. Application to microscopic objects, by giving rise to congestion of blood in the head and eyes, predisposes to cataract, which

is often accelerated by actual inflammation of the capsule; but I have had occasion to observe, that, in persons thus employed, the cataract and other affections of sight have formed not in the eye employed, but in the one which is kept shut. Sudden and very strong light produces cataract from inflammation in new born children, which either advances to complete cataract or remains through life in the form of a central opacity of the lens and capsule: exposure of the head and eyes to the heat and light of fires predisposes to cataract, either at the time, or as the patient advances in life.

Professor Beer has found cataract of the fluid of Morgagni to take place immediately after exposure to the fumes arising from the oxydation of metals. Long exposure of the eyes to dust, and the habitual use of spirits, predispose to cataract in persons approaching to old age.

Practitioners, who give themselves little trouble in investigating the particular nature of cataract, too often satisfy themselves and their patients by telling them to do nothing, but wait till the cataract is ripe or fully formed, that is, until they are deprived of all useful vision; it is obvious, however, that in all cases depending upon inflammation, however slow, and however obscure, that it is the duty of the practitioner to prevent the further formation of the

disease, by the means directed to subdue such diseased action, and, generally speaking, the same line of treatment which has been recommended for iritis, is equally applicable to the early stage of capsular inflammation, and it will be greatly aided by use of setons or issues and rubifactions.

I am by no means disposed to think it adviseable that the operation, especially if done by absorption, should be delayed till the more perfect formation of the cataract, even when this is most likely to happen. The question is to be fully stated to the patient, and if the value of his time be great, either by reason of his advanced age or the avocations in which he is employed, I see no reason why he should suffer the inconvenience of long protracted incapacity extended by waiting for the more perfect formation of a cataract, which often is, *cæteris paribus,* capable of being removed at any stage of its formation by breaking up the lens; and as an operation will never be undertaken while one eye continues perfect, it is satisfactory to know that we do not hasten the formation of cataract in the other eye by operating on the one that has become affected; for, with proper precautions, it would even seem to check the progress of the disease in the other eye; and it is only by an accurate attention to the different species of cataract that we can tell when any given case has reached its utmost degree of formation.

CHAP. VI.

AMAUROSIS.

We have seen that inflammation of the several coats or membranes of the eye is characterized by distinct appearances, and is productive of changes in the state of the different transparent media, according to their respective connexions with the former. The symptoms of idiopathic sclerotic inflammation have been traced through the different changes which it produces in the structure of the cornea. We have found inflammation of the internal or choroidœal surface of this membrane to be followed by contraction or obliteration of the pupil; and in like manner we have traced the origin of cataract from inflammation extending from the capsule to the lens. It has been shewn that these several diseases seldom pass the limits of each particular part, and of the transparent medium which it supplies, and which collectively constitute the mechanism of the organ. We now come to the symptoms of inflammation, as it affects the sentient power and the perceptive structure of vision; and as disease here ceases to be indicated by the more obvious changes of vascular action, and we can no longer estimate the presence or degree of inflammation by the evolu-

tion of its usual phenomenona; these, as we have already seen, become more obscure as they recede from the external surface, but here they are in themselves, as well as in their remote effects, declared by alteration of function alone.

As the most insensible structures exhibit the most acute symptoms when inflamed, sentient structure, on the other hand, is rendered by over excitement less sensible, as far, at least, as regards its specific power of perception. Although more vague analogy would lead us to expect that inflammation of nervous expansion would be attended with the highest degree of painful sensation, so the loss of sensorial power in the present, as well as in the more general affections of the cerebral system, has been attributed to a direct loss or exhaustion of vital power; but before attempting to ascribe the symptoms of amaurosis to any particular cause or condition of the nerve, it will be necessary to examine the circumstances under which it more frequently occurs, and if these appear to be such as must occasion a greater quantity of blood to enter into, or press upon the retina, we are not to prescribe what the symptoms ought to be, in order to accord with any received opinion, but endeavour as much as possible to follow up their connexion with the ascertained nature of the exciting causes and the probable state of the part. We may rest assured, that when-

ever we are obliged to assume, for the purpose of explanation, any gratuitous condition, that there is room for further investigation, and that a link in the causal chain remains to be discovered.

The augmented quantity of blood in any given part, may proceed from inflammatory action, which, as it is here unaccompanied by visible changes, is liable to escape detection. Another, and perhaps more frequent origin of topical congestion, may proceed from a predisposing debility in the vessels of the part acted upon by such causes as prevent a free return of the blood, or which determine it in a preternatural quantity to the part. Amaurotic blindness may therefore be the consequence of direct arterial inflammation of the retina or the vascular structure on which it rests; it may arise from topical congestion in consequence of the pressure or the inflammation of adjoining parts, by a local debility influenced by repletion of the system, obstructed circulation, irritation reflected from a disease of distant parts, or it may arise from actual loss of power from the natural decay of age or protracted debility; excepting therefore when it occurs at a very advanced period of life, it is almost always formed out of some pre-existing disease.

Amaurosis, obscure in itself, has been rendered much more so, both by hypothetical assumption with respect to its nature and by the doctrinal

distinctions by which its varying symptoms have been classed as separate species of disease; and as these consist of internal or functional and external or visible, these species have been described sometimes in reference to the former and sometimes to the latter. The whole may be considered as the varied expressions of the same disease and may be included under the term of amaurotic amblyopia, without any reference to the state of the pupil, which alters from its natural appearance only in the more advanced stages of the disease.

The most early, and perhaps the most characteristic symptom, consists in an interrupted state of vision; thus, in reading, the patient loses single letters or lines, and uses motions of the head in order to recover them; this resembles deafness when it proceeds from a similar and parallel affection of the auditory nerve, in which the person loses for a moment all sensation of sound. The amaurotic patient sees objects in particular lights or positions, and loses them by altering the posture of his head; he is annoyed by the appearance of imaginary bodies floating before him, suddenly rising and sinking. Nosologists have given these various names from supposed resemblances, as *musci volitantes, myodesopia, scotoma;* this morbid sensation increases till it has the appearance of a dark net or crape, through which every thing is

seen indistinctly; sometimes the patient becomes myoptic, and at other times presbyoptic; diplopia, or double vision, when both eyes are employed on the same object, and strabismus, are likewise associated with amaurosis, but are rather to be considered as occasional or accidental circumstances referable to some accompanying structural alteration. It is not uncommon for amaurotic patients to see all objects crooked or disfigured, more rarely inverted and of different colours from what they actually possess. It is not unusual for the flame of a candle to appear lengthened, rent or torn in the middle; a symptom considered by Professor Beer as a certain indication of an affection of the optic nerve within the cranium, but until we are able to associate the various alterations of vision with actual causes, their enumeration is of little consequence. The presence of light is sometimes painful to an amaurotic patient, but for the most part he eagerly seeks a strong reflected light as the only means of dissipating the imaginary objects which appear floating before him. For the most part amaurotic amblyopia is increased by all depressing passions of the mind, and by bodily fatigue, while, on the contrary, the patient enjoys a temporary access of vision by sudden joy and the use of diffusible stimuli; soon followed, however, by an aggravation of his symptoms. When the amau-

rotic blindness is complete, the eye is totally insensible to light. This state of perfect blindness may either be preceded by such symptoms as have been enumerated, or it may take place suddenly in both eyes or in one. Amaurotic amblyopia is not only subject to momentary aggravations, but the whole train of symptoms often appear and depart periodically, especially when it occurs as a symptomatic affection of hysteria and chlorosis; in such cases each succeeding attack becomes longer, and one of them at last terminates in permanent blindness.*

Amaurosis appears occasionally under the well marked intermittent forms of blindness, of nictalopia and hemerlopia: the first of these is well known to occur frequently in horses, an animal which by our mode of management is rendered peculiarly liable to inflammatory affections of the eye; hemerlopia not only appears among people exposed to a change of climate as soldiers and sailors, but it has also occurred as an epidemic among the indigenous inhabitants of particular districts.†

* Beer has recorded the case of a Jewess, who in her first three pregnancies, began at the commencement of each to grow blind, and was completely amaurotic by the third or fourth month; during the two first she remained blind, till after the delivery, when she recovered her sight; but the third time it remained permanent.

† Vide Sauvages, Nosologiæ, method. class. vi.

Along with the symptoms of diminished or depraved vision, there is generally present some alteration in the mobility of the iris, and the size and shape of the pupil. The rigidity of the iris is for the most part accompanied by a dilated pupil; sometimes, however, the pupillary opening is diminished; but in either case it no longer obeys the stimulus of light, being altogether immoveable, or having a tremulous motion independent of the degree of light, or actually expanding as the light is rendered more powerful. The pupillary border becomes more or less angular either in indefinite spots, or it forms two corresponding angles, one above and one below, like that of the cat tribe; or the pupil is drawn longitudinally from the nose to the temple, as in ruminating animals, or in an oblique direction. The pupillary opening has seldom the clear appearance of a sound and healthy eye; it occasionally happens when one eye only is affected, that not the smallest imperfection is visible in the pupil of the amaurotic eye, so long as both are kept open; but the moment the sound eye is shut we find that the iris of the other is immoveable, the pupil dilated and even misplaced. During the formation of amaurosis, the patient often suffers from headach or pain within the orbit, pressure of the eye excites uneasiness; there is a fullness of the part, and the patient is afraid to move the eye or

even the eyelid; giddiness and other symptoms of cerebral affection are often combined with the gradually forming amaurosis; but these and other diagnostic marks of accompanying disease are for the most part sufficiently obvious to point out the connection subsisting between them, and to enter more minutely into a detail of all such combinations would be inconsistent with the limits of this view of the subject.

The middle period of life is most liable to the various forms of amaurosis as we have now described it; dark coloured eyes are more disposed to it than those of a light colour; the disease appears more distinctly hereditary than even cataract, and some families have for generations become blind from amaurosis about the same period of life. In persons so predisposed, amaurosis is liable to occur by the suppression of any habitual discharge, and to be vicarious with cutaneous and other affections;* and its production is evidently favoured by whatever tends to augment the quantity of blood in the vessels of the head, as sleeping with the head low, going to bed immediately after eating, much stooping of the head, continued observation of microscopical objects; yet in this disease as in cataract, it is often the unemployed eye that becomes effected.

Tedious or laborious parturition, violent retch-

* Beer has published a case in which the person recovered from amaurosis on the attack of the itch.

ing or straining to vomit; or in short, whatever is liable to produce topical congestion. Among the occasional or exciting causes may be reckoned the sudden application of a very strong light; travelling in countries covered with snow or sand; the excessive use of reflected light; continued fever, and the instantaneous effect of lightning; restrained anger, or any very violent emotion of the mind. Amaurosis is often symptomatic of diseases of the abdominal viscera, which are generally cognizable by the general aspect of the patient, or must be ascertained by due inquiry; it occurs in consequence of functional derangement of the stomach, probably from the irritation of vitiated secretion. In this case the pupil is often much dilated before the patient complains of any considerable degree of blindness. It is a symptom also of worms: it is one of the most invariable effects of pressure on the brain, or upon the optic nerve, or on the retina. In evidence of which, numerous dissections might be quoted.* Obstruction to the return of the blood by the jugular veins has been also found to produce amaurosis, and it is found to follow concussion of the head or spine.

* Haller mentions a case where bony matter was found immediately in contact with the retina. Beer relates a case of amaurosis occasioned by the pressure of a depressed lens, which after being eight years lodged in the vitreous humour, reappeared in consequence of a fall, when the patient immediately recovered from the amaurosis.

Amaurosis is well known to be caused by the use of narcotic substances, which have been supposed to act specifically in depressing the energy of the nervous system in general; the symptoms of amaurosis, however, by no means support the opinion that they have a direct sedative operation; the loss of sensibility as well as the dilatation of the pupil may be the effect of increased excitement, or a plethoric state of the vessels, for besides considerable external turgescence, sensibility of the pupil almost invariably returns on having recourse to venesection. The principal substances of this class are *opium* in large doses, *hyosciamus*, *stramonium* and *belladonna*. The well known effect which these substances possess of dilating the pupil when applied to the surface of the eye, or of the neighbouring parts, differs only in degree from what follows their internal exhibition, but instead of effecting a loss of power or paralysis of the iris, they seem rather to act as stimuli on the antagonist fibres which compose the greater ring, and thus overcome its normal or regular obedience to the stimulus of light, analogous to those involuntary and spasmodic actions which they occasion when taken internally.*

* The artificial dilatation of the pupil appears to have been known to the ancients, and to have been had recourse to, previous to the operation of couching, as appears from the follow-

Amaurosis is likewise produced by idiosyncracy of constitution, with respect to particular articles of diet, and to particular periods of uterine gestation. Beer has found it to proceed from the abuse of bitters, and he mentions that it became a frequent disease at Vienna, when in consequence of the prohibition of coffee and other colonial produce, an infusion of chicory was much used. The external and internal use of lead have also been known to produce amaurosis. Beer instances a case of a woman who became amaurotic as often as she drank chocolate. Amaurosis is often allied with gout and rheumatism, generally accompanied however, with some structural changes of the organ. In these cases the eye is watery, and is affected by variation of temperature, and the iris is for the most part tremulous.

There is a species of amaurosis differing very much in its nature from that arising out of such causes as have been enumerated, and which appears in that defective state of vision incident to

ing passage from Pliny, and quoted by Doctor Walroth, in his Syntagma De Ophthalmologia Veterum.

" Anagallida aliqui corchoron vocant, duo eius genera, mas " florc phoenicco foemina coeruleo : non altiores palmo, frutice " tenero, foliis pusillis, rotundis, in terra jacentibus nascuntur " hortis et aquosis. Prior floret coerulea, Utriusque succus " oculorum caliginem discutit magis cum attico melle inunctis. " *Pupillas dilatat et ideo hoc iniunguntur ante quibus paracentesis* " *fit.*"—*Plin.* 25, 92.

old age, and the cause of which would appear to be owing to a deficiency of pigment. In this form of the disease, the bottom of the eye appears pale, yellow and glittering; sometimes the ramifications of the central artery appear visible; this, with great paleness of the iris, gives the eye some resemblance of that of a cat. This form of amaurosis is not confined entirely to old age, but is sometimes met with after continued fever, in the last stage of phthisis pulmonalis, and in atrophical children; it rarely proceeds to perfect insensibility to light, but seldom admits of any cure.

Prognosis.

In amaurotic amblyopia, we have always to fear the increase of disease by the enlargement of the insensible points of the retina, and the increasing duration of periodical attacks when completely formed, it is seldom or never (excepting in cases caused by narcotic poisons) cured without leaving some degree of imperfect vision behind it. When amaurosis affects one eye without any evident cause being perceptible in the state of the organ itself, we may expect that the other will become affected also; the longer the amaurosis has been present, and the more completely it is formed in respect to vision, the more hopeless the case must be; experience has not

shewn that mobility of the iris is to be relied upon as promising a return of vision, as it often happens that in the most inveterate cases the iris remains immoveable; and on the other hand, that the patient sometimes recovers his vision without any return of motion in the iris.

Treatment.

It is necessary that the practitioner should bear in mind that in cases of amaurosis, where the usual symptoms of inflammation are least of all observable, the necessity for relieving the vessels of the part will often be the most urgent, and although a few ounces of blood taken from the temple, may subdue any outward appearance of congestion or arterial action which has taken place, in consequence of pressure, the evacuation must be carried to the full extent of producing syncope in order to make such an impression on the congestive state of the deep seated vessels, as will enable them to recover their power of contraction. The effects of depletion are to be assisted by the usual resources of lessening the quantity of blood sent to the part; and an important object must be the cure or removal of any obstructions that may exist in other parts. Leeches applied to the septemnasi, I have found to be more effectual than any other mode of using

them, especially in chlorotic amblyopia. Purgatives, antimonial emetics, pediluvium, seclusion from the light, cold applications to the eyes, blisters and rubifacients to the neck, and behind the ear, sinapisms to the feet and legs, the reproduction of any habitual discharge, or cutaneous disease.

It will be long before the utmost success of a rational treatment can compensate for the cases which have been rendered irremediable by the empyrical use of stimulants, and more especially of galvanism and electricity. These even at the present day are resorted to, and recommended without any reference to, or discrimination of, the causes to which the disease is owing; what can be supposed more mischievous than the application of electricity to an amaurotic eye, when it is perhaps occasioned by some organic disease and thus stimulating a part already suffering from over excitement. Without first removing the primary affection; by a stimulating plan of treatment, we not only take away all power of recovery from the part, but very likely bring on a state of actual suffering in addition to blindness for life.

In amaurosis proceeding from derangement of the stomach, antimonials given in small doses are of much service; I have combined them with infusion of the arnica montana, a medicine which

has the reputation of being useful in this disease, and with the euphrasia, or eye-bright, and as I think with benefit. From some trials of the euphrasia applied locally, I was led to believe that it possessed the power of dilating the pupil; other experience has however proved that it has no such influence.

"A gutta serena," says St. Ives, "has been "hitherto deemed incurable. I can, notwith-"standing bring many cases to prove the con-"trary. My method," he adds, "is to bleed them "in the arm, in the foot, and in the neck, accord-"ing to their repletion; I afterwards prescribe "emetics to be taken once or twice in the interval "of two days."

PART II.

ON CONJUNCTIVAL INFLAMMATION.

CHAP. I.

ON CATARRHAL OPHTHALMIA, ARISING FROM CLIMATE AND ATMOSPHERIC CHANGES.

From many internal and external causes the membrane of the conjunctiva is liable to become the seat of inflammation, more especially that portion of it which gives a lining to the inner surface of the eyelids; the disease, in its general nature, differs little from that which is met with in other places, having a similar surface, such as the nose, the fauces, the bronchial cells, and the urethra; but the continuation of the membrane forward upon the anterior portion of the eye, and the consequent liability of the inflammation, to affect this important organ, attaches much interest to all the circumstances capable of producing it. A variety of causes, which tend to excite conjunctival inflammation, produce, according to the force of

their respective operation, corresponding degrees of violence and duration in the nature of the disease, from the simple catarrhal to the most violent form of suppurative or purulent disease. The operation of the external causes will, necessarily, be modified by the habit of the individual, and disposition of the part; so that the milder will sometimes gives birth to a violent inflammation, while another will experience only a slight form of disease from the operation of the most virulent, without prejudice, however, to the more general effect proper to each. Ophthalmia, in its simple form, is most frequently owing to certain changes or states of the atmosphere. These, as they are more permanent and connected with local circumstances, or as they occur under accidental ones, give birth to ophthalmia, as an endemic, or epidemic; and lastly, as out of either, the disease acquires a power of propagation, there will necessarily be with each a mixed operation of the original cause and the secondary one. These influential circumstances, I propose to examine separately, beginning with such as are connected with endemic ophthalmia.

Mucous membrane being defended by the situation of the parts, which it serves to line, from the indiscriminate contact of external substances, is quickly affected by any change in the quality of the body; to the usual properties of which it has

by habit been rendered passive and familiar. Next to the membrane of the nose, which is to be considered as extending to the trachea and bronchial cells, the conjunctiva is more freely exposed to the action of the atmosphere, than any other membrane of this class, and consequently like it must suffer when the atmosphere deviates from its usual condition, or becomes the medium of matter in itself noxious. Epidemic and epizootic diseases, there is every reason to believe, for the most part, owe their origin, and in many cases their propagation to some change in the constitution of the atmosphere; but with the probable nature of such states, we are altogether unacquainted. The connexion of diseases of the respiratory canal with the grosser atmospheric changes is sufficiently established by daily observation. Inflammation of the mucous membrane of the nose, and pulmonic catarrh, predominate most when the atmosphere is cold and moist. Inflammation of the pleura, on the contrary, is more generally excited by the prevalence of cold and dry weather. The latter not being exposed to the immediate contact of the atmosphere, suffers, by sympathy, with the surface of the body; the former by the immediate action of the air upon its own surface. The pleura having a different structure and function, is not liable to the same form of inflammation with the membrane of the

bronchiæ; it is therefore between this last, and the conjunctiva of the eye, that we look for a strict analogy with respect to the cause and nature of disease.

The conjunctiva, though exposed to the immediate contact of the atmosphere, is but seldom affected by the cold humid state of the air, which in our winters proves so hurtful to the bronchial membrane. My own observation agrees with the testimony of most writers, that, although a humid state of the atmosphere is that which proves most productive of ophthalmia, it is rather when combined with a certain degree of heat, than with the cold of winter. With this apparent difference as to season, the disposition of the two parts to disease will appear the same. Humidity is deleterious to both, but vicissitude of temperature, seems to give it particular force as an exciting cause of inflammation, whether it be the inflammation of common catarrh or of ophthalmia. The membrane of the bronchiæ is, at all times, subject to the difference of temperature between the air, inspired and that which is expired, and it necessarily suffers, from being so circumstanced, a greater vicissitude when the weather is cold, than when it approaches nearer the temperature of the body. The conjunctiva, on the contrary, experiences no other vicissitude of temperature, than what takes place from the

atmosphere itself. Catarrhal affections of the bronchial membrane, are therefore confined to cold countries, while a similar inflammation of the conjunctiva is peculiar to countries of a warmer latitude.* It will therefore be conducive to a clear understanding of the subject, to refer first to the circumstances under which ophthalmia exists in those countries of which it may more strictly be considered as indigenous; and then to describe the appearance which it assumes when it occasionally occurs in this and other colder climates.

It has been observed by travellers, that ophthalmia is a frequent disease with those who are exposed to the night air in moist and warm countries, and as the deposition of dew in such situations takes place in the greatest abundance, its agency has been often considered as the principal cause of the disease. As it has been established, however, by recent observations, that the deposition of dew is the effect, and not the cause of the diminished temperature at the sur-

* Although the discharge which takes place in this last mentioned disease, may and does generally assume more the properties of pus than mucus, I have employed the term catarrh, to signify this as a more simple and milder form of disease than that which occurs from inoculation or infection, and to which the term of *purulent* has been more particularly attached.

face of the earth, the human frame is, probably, more affected by the vicissitude of temperature, than by any specific quality of the dew; but taking the deposition of dew, as equivalent in point of fact, with the reduction of temperature, the same conclusion will hold good, whether we denote the circumstance by one term or the other. Inasmuch, therefore, as a humid soil when acted upon by a tropical sun, will be productive of the greatest vicissitude of temperature, between day and night, insomuch must it be pernicious to those who are exposed to such opposite extremes. Ex tempestatibus optimæ æquales sunt, sive frigidæ, sive callidæ; pessime quæ maxime variant. Quo fit, ut autumnus plurimos opprimat, nam meridianis temporibus calor, nocturnis simulque etiam vespertinis, frigus est. Corpus ergo, et æstate, et subinde meridianis caloribus relaxatum, subito frigore excipitur.*

Egypt appears to be the country which is, of all others, the most favourable to the production of inflammation of the conjunctiva. The English and French troops employed in that country, during the contest which ended so honourably to the British arms in the year 1801, were harassed by the universal prevalence of this disease. The second expedition of English troops was equally

* Celsus de Medicina.

visited by its ravages,. The intimate connexion which subsists between the membrane of the conjunctiva and the eye, and, consequently, the ready extension of disease from the one to the other, induced both the English and French surgeons employed with the armies in Egypt, to regard it as a disease of the eye rather than of the conjunctiva, and, in their attempts to account for the great prevalence which it acquired, they looked to those circumstances which more readily associated themselves with such an opinion, and these being exactly of an opposite nature to the exciting causes of ophthalmia, they were led to conclusions in direct opposition to the facts of the case; a great deal was said of the effects of excessive light, dust, nitrous and calcareous particles; which, however, they might be productive of injury to the eye, do not appear to be at all connected with the disease in question. A similar view of the peculiarities of the climate appears to have led Prosper Alpinus to the same conclusions, in opposition to what he himself states to be the seasons and situations most productive of the disease.

Although a number of the more minute facts respecting the seasons and the meteorological variations of this singular country remain yet to be ascertained; it does not require that a person should actually visit it to weigh the effects of those leading features which distinguish it from

every other portion of the globe. This country, which has at different times been the source and seat of all human knowledge, as well as the cradle and abode of misery and disease, is, to use the words of the most eminent of its historians, "a "boundless plain, which at different seasons is "an ocean of fresh water, a miry morass, a ver-"dant field, or a dusty desert."

In estimating the humidity of the atmosphere, and consequently the vicissitude of temperature which it occasions, it is necessary that we consider not only the copious source of moisture which the irrigation of the Delta, by the annual inundation of the Nile, affords by supplying the water of vaporization, but also the power of the atmosphere in taking it up. Under the operation of a nearly vertical sun, and in the midst of an arid desart, this process must necessarily go on with the most amazing rapidity. In the short period of three months, the immense body of water which covers the Delta is evaporated. When this source of moisture fails, the winds of the desart, like a consuming pestilence, dry up the sap of vegetables, and evaporate the cuticular discharge of animals. Flesh meat dries and becomes as hard as wood; and the rapidity of evaporation by preventing the process of putrefaction, forms the basis of that art of preserving human bodies, with which the idea of the country itself is strongly associated.

This rapidity of the vaporization prevents, however, the formation of those miasmata specifically pernicious to the human frame.

The only deleterious effect of the wonderful extent to which the process is carried in that country, seems to consist in the direct effect which it produces on the surface of the body, by the sudden chill of the evening, succeeding to the copious perspiration which takes place during the day. The conjunctiva is the most delicate portion of the surface exposed to the direct operation of these causes, but the frequency with which dysentery, also, prevails among those exposed to the night air, shews their effect on the body in general.

To apply this general view of the climate to the production of ophthalmia, we must examine the seasons and circumstances under which it chiefly occurs. Though Prosper Alpinus attributes the disease to the various sources of irritation applied to the eye in that country, he admits it to be chiefly prevalent in the autumnal season; although, at that time, in consequence of the inundation of the Nile, the eye is relieved from the operation of the sand and the hot winds of the desart.

Volney, whose accurate observations might have led his countrymen to a better mode of philosophizing than they adopted on this occasion,

gives a number of facts which identify the disease with the humidity of the atmosphere. The common people, he observes, are more liable to the disease than persons in easy circumstances, and the inhabitants of the Delta are more subject to it than the Bedouin Arabs, who live in the sands of the desart. " In reasoning from these facts, there-" fore," says the author, " it appears to me that " we cannot admit the southerly winds as the prin-" cipal cause, since in that case the complaint " should be peculiar to the month of April, and " the Bedouins be affected by it like the peasants, " nor to any subtile dust, for to this the peasants " are again more exposed than the inhabitants " of the towns, among whom it is most general. " The custom of sleeping upon terraces seems a " much more probable cause."

The excessive perspiration occasioned by the woollen head dresses worn by the natives, may render the head more liable to be affected than any other part from the cold of the night when sleeping exposed to the open sky.

Not only the Bedouin Arabs remain free from the disease, but Europeans who are not particularly exposed to the night air, are also safe from its attacks. The nature of military duty prevented our soldiers from using this precaution, and in a particular manner they became victims to the complaint. The men suffered more in proportion to the

officers of the English army; as the latter enjoyed a better though often incomplete defence from the coldness and dampness of the night; and officers employed in strictly military duty suffered more than those attached to the civil departments. Of four officers who slept in the same tent, two had the precaution to bind their eyes up every night, when going to rest, and the two others did not; the latter were in a very short time attacked by the disease, while the other two escaped.

The auxiliary army from India, the medical history of which we are indebted to Sir James Mc Grigor for many valuable and important facts, traversed the desart from the Red Sea without being molested by ophthalmia; but no sooner did it reach the banks of the Nile at Gizzeh, than it became a prevalent complaint. I shall now compare these results with the statement Assalani has given us of the circumstances attending the disease in the French army, and which I more willingly do, as I had not met with his very valuable treatise when I formerly endeavoured to shew the connexion of this disease with a humid atmosphere.

"The ophthalmia first appeared among the soldiers of the army of the East, in the beginning of Fructidor, year six, and continued until the month of Frimaire of the year seven. More than two thirds of the army were attacked with it almost at the same time, a circumstance which

rendered the duty very severe. The malady attacked not only our soldiers, but also the inhabitants of Upper and Lower Egypt.

"Several individuals who had been once cured of the disease were attacked by it a second time: and a Maltese boy, my domestic, was affected with it as often as he slept in the open air.

"Among the causes I consider the great light of the sun as that which contributes most to excite in the delicate parts of the globe of the eye a considerable degree of irritation; which is followed by indirect debility, if I may be allowed to borrow an expression from the system of Brown. It is not in Egypt only that we observe complicated diseases of the eyes. At Bologna in Italy, for example, a stranger is struck with the number of blind people who sing or play on different instruments through the streets of this great city; and many individuals are to be seen there with the globe of the eye projecting and more enlarged than in a natural state, with staphyloma, opacities, and other affections of a similar description. It is well known that these affections are the result of different inflammations, produced by the brightness of the light reflected from the walls of the houses whitened with lime. During summer this light becomes so strong, that it fatigues and injures the eyes, particularly in

those who either from their situation or their poverty cannot guard themselves against its effects (vid. the Memoirs of the Institute of Sciences of Bologna). At Malta in the year seven, the one half of the garrison was attacked with hemeralopia, which was attributed to the too great irritation of the rays of the sun reflected from the surface of the walls, or from the soil which was of a white and calcareous nature. In Egypt, the view of immense arid plains, the repercussion of the rays of the sun, reflected by the soil, united with the nature of the roads and places on the sandy borders of the Nile, of which the heat and the splendour were so great in full day, that scarcely could a place be fixed on where one could wish to place his feet; necessarily weakened, fatigued and disposed the eye to particular affections."—That these sources are not the cause of the ophthalmia in question, the author proves by the following references to facts.

"It is certain, that if the dust or the sand of the soil of Egypt, were the cause of ophthalmia, this malady would not cease to attack the inhabitants during the whole course of the year with the same force, since a day scarcely passes, in which they are not obliged to walk in a thick mist, or in whirlwinds of dust elevated by the wind. To prove this fact, I may refer to those who have frequented the roads of Bulac and Old Cairo. If

this dust carried to the eyes were the sole cause of ophthalmia, we ought to be exempted from the disease where the cause does not exist. We have, however, seen the contrary in the Delta, and principally on the cultivated borders of the Nile during its inundations. When we were exposed to the air during the night we were immediately attacked with ophthalmia, which cannot be attributed either to the dust or the sand, which are then under water. It was chiefly, I repeat, in the time of the inundation of the Nile, that a great number of our soldiers were affected with ophthalmia. (Voyez la Décade Egyptienne.) How were the French of the division Dessaix, just returned from Upper Egypt to Cairo, attacked with ophthalmia, although they had continually remained upon the Nile? I have seen the sappers appointed to direct the flying bridge, established on the Nile between Giseh and Ramahah, attacked with this malady ; and I have seen a number of persons who had contracted it without having gone from their houses, which were well defended against the dust. At Cairo, when in charge of the surgical duty of the Military Hospital No. 1, I have seen several of the wounded seized with ophthalmia, solely from having been placed near a window imperfectly closed, or in a room that had been covered with mats, so little approaching each other, that in several places the

passage of the stars to the meridian could have been observed. Ophthalmia supervening to the unfortunate patient in the hospital, was often more difficult to cure than the wound which he had received. We cannot say that it was the dust introduced through the windows which occasioned the malady, since at that time the places round Cairo were still inundated, and particularly that of Beker-Jell-Fild, on which the hospital was situated. This was in Brumaire of the year VII.

" Notwithstanding this, I do not pretend to say that the dust from the soil of Egypt is not injurious to the eyes, but I think that it alone is not sufficient to produce ophthalmia; and it seems to me more just, as I have already said, to attribute this malady to the suppression of perspiration, which occurs very often in Egypt, principally during the night, and which, throwing itself upon the part most weakened, affects sometimes the intestines, but oftener the eyes, fatigued by the too vivid light of the sun. This in my opinion is the true source of the ophthalmia of Egypt.

" Soldiers on guard, or at bivouac, should during the night cover their head and feet well, particularly if they should happen to be sailing on the Nile; and if they are in moist and cold situations, they should avoid as much as possible the least current of air. Several have been attacked by ophthalmia from having been near a window not

exactly closed. In this manner citizen Fèvre, engineer of bridges and causeways, was affected with inflammation of one eye, the first night of his arrival from Syria at Cairo, although he had lain the preceding nights in a bark upon the Nile, and in open air, without experiencing the least indisposition, because he had taken care to have himself well covered.

"As for me, I have neither used spectacles nor collyria, nor any preventive to guard myself from the burning sand, the nitric, the ammoniacal or calcareous dust, nor even against too great light; but, on the other hand, neither the freshness of the evening, nor the beauty of the night, has induced me to open my windows, or lie in the open air; and when obliged to bivouac, my mantle served me as a tent, and became my ægis."*

In the account of the embassy from India to Caubul, conducted by the Hon. Mr. Elphinstone, there are the following observations. "The great difference between the temperature of the day and night no doubt contributed to this mortality. The Europeans, however, did not suffer any

* In an account of the Egyptian ophthalmia, which was written in 1806, I had no means of consulting any author but such as accident threw in my way, I therefore was ignorant of the proofs here extracted from the treatise of Assalini in corroboration of this view of the subject, and also of similar inferences contained in a treatise by Mr. Power, 1803.

serious illness. Even the English gentlemen used to suffer from cold during the night marches, and were happy to kindle a large fire as soon as we reached our ground. Yet the sun became powerful so early in the morning, that we always awoke with a feverish heat, which lasted till sunset. Some instances of violent inflammation in the eyelids were the only disorders of which we had to complain."

Such a complaint is also experienced among the nations on the Coromandel coast and Mysore country of Hindostan at a particular season of the year: the following account of it has been sent to me by my friend Mr. Scot, then resident surgeon at Nellore.

"The country sore eye is an inflammation of the conjunctiva, chiefly affecting that part lining the palpebræ; the tarsi are much affected, and generally glued together by their own secretion, and thus give rise to great pain, by confining the pus secreted by the inflamed adnata, the quantity being generally prodigious. The causes of this disease I cannot satisfactorily establish. Dr. Berry is inclined to attribute it to a certain dryness of the atmosphere, generally accompanied with dust; and as the disease does not appear during the extreme heat of the season, but towards its termination, he forms an ingenious theory to establish, that occasional showers passing hastily through

the atmosphere, attract the other globules of vapour or suspended fluid, and produce in this manner extreme dryness; he also hints at the electrical state of the atmosphere, but we have no correct observations on this head; I am more convinced that it is caused by the eye fly, because the disease appears with them, which is always about the flowering of the tamarind tree ; they naturally buz about the eye, and are inconceivably troublesome; when one of them happens to get into it a most pungent pain is felt, but this is not followed by inflammation ; it is impossible to try experiments, as a touch to them is death ; the cure is simple and certain.

"I shall give a translation of a paper I have just received from a native physician, who is under my authority. The country sore eye attacks people from June to September. The leaves of the tamarind tree falling off, are succeeded by new leaves and flowers ; from the latter, sharp spiculæ fly off, and filling the air, are conveyed to the eyes, which causes inflammation. The first day there is a feeling of sand in the eye; the second it appears of a red colour, very pale, which becomes deeper on the third ; the eyelids swell and an itching pain occurs, which obliges the patient to rub his eyes roughly, which greatly increases the pain and inflammation. The pain and inflammation continue for three days, and

from the sixth to the tenth he cannot open his eyes, nor take food ; the pain then diminishes, the eyes can be opened, and again are of a pale colour, at the end of the fourteenth day ; at this time excrescences or proud flesh sometimes appear, which are cured by a sort of black stuff (antimony I believe). If the viscid matter flow from a sore eye to the eye of an healthy man, the disease will be communicated as in small pox. For three days no medicines are given ; for the three next, a cloth dipped in the infusion of turmeric must be applied over the eyes ; then opium, turmeric, gall nuts, cashoo nuts, beetle and aloes are pounded together with lime juice on an iron plate, and baked over the fire ; and this stuff is rubbed over the eyelids externally. To cleanse out the pus, woman's milk is poured into the eye, and then coagulum of woman's milk and alum, or the juice of tamarind leaves ; alum water is finally recommended."

The method of treatment employed by the natives of Egypt very much resembles that of the inhabitants of Hindostan : in obstinate cases they have recourse to astringent powders, and lotions composed of gall-nuts, antimony, solutions of alum, sulphat of zinc, sulphat of copper, saffron, and opium.*

* Vide Assalini.

In the above account of the ophthalmia which appears in India, although a different cause be assigned for its production, to me it appears to corroborate what I have already stated in support of the operation of humidity; as it prevails at that season when dew is most abundant, and when the difference of temperature between the day and night is the greatest.

The effect of humidity, in causing or giving birth to ophthalmia, is distinctly adverted to by Hippocrates, and we find the same opinion maintained by Avicenna in the following terms.

"Quumque precedit hyemos septentrionalis, et "sequitur ipsum ver meridionale et pluviosum, et "æstas pluviosa, multiplicatur ophthalmia."

CHAP. II.

CATARRHAL OPHTHALMIA.

A CATARRHAL inflammation of the conjunctiva is a complaint but seldom met with in this country,* or the northern part of Europe, as an epidemic

* I have reason to believe, that a purulent ophthalmia is by no means unfrequent among the peasantry in Ireland. I have seen both men and women, who have said that they lost their eyes by an attack of ophthalmia, which they described in such a manner, as to leave no doubt in my mind of its having been a very bad form of purulent disease of the conjunctiva. Mr. Power, in a note to his Treatise on the Endemic Ophthalmia of Egypt, mentions this as occurring within his knowledge also: and adds, that those affected by it believe it to be contagious. It is a curious coincidence, that such a disease should be more peculiar to that country than to this, and that in Ireland also the germ of the Egyptian affection should have been preserved and fostered into action, when little or no appearance of it had taken place in this country. And if a native disease like this do exist; from the history of that which chiefly prevailed in the army, the latter might be explained without reference to any foreign infection whatever; and had I not, by frequent opportunities afforded me of examining the disease imported from Egypt by the second expedition, been able to establish its identity with that consequent on the first, I should have attributed the dreadful prevalence which ophthalmia has had in the army to the communication of a disease of Irish extrac-

disease. Nevertheless, even with us, there are certain states of the atmosphere, with the peculiar nature of which we are unacquainted, which excite in the conjunctiva what I may call a mucous or catarrhal inflammation. Such an epidemic has appeared to a very considerable extent both here and on the Continent.

The causes of epidemic ophthalmia in northern countries, whatever they may be, seem to have a less extensive influence than those which favour the production of epidemic catarrh or influenza; the disease to which it has the strongest analogy, both as to seat, nature, and prevalence. The influenza prevails sometimes over whole continents and kingdoms, while epidemic ophthalmia is, generally, confined to particular towns, cities, and districts. While the influence of a certain state of the atmosphere, as a cause of both diseases, can scarcely be denied; the circumscribed limits of the ophthalmia seem also to correspond with the range of a more limited contagion. Catarrh being a disease attended by fever, may be supposed to propagate itself through the medium of the atmosphere; and although this ophthalmia may be the local symptom of a general disease,

tion; its dissemination afterwards depending on the natural operation of the infection, and the wilful application of it; two subjects of which I shall take further notice when treating of the disease of the army.

and may be propagated in the same way, the probability is, I think, most in favour of its being communicated only by the conveyance of the discharge to the eyes of the healthy, by the various channels which domestic intercourse will naturally suggest.

The history of all diseases, originating from some particular impression received from the atmosphere, but capable when formed, of propagating themselves by contagion, such as influenza, scarlatina, hooping-cough, &c. is rendered particularly difficult; for the same circumstances which favour the communication by contagion produce also a predisposition to be acted upon by the more general causes existing in the atmosphere. The principal cause which gives force and opportunity to the action of contagion, is the crowding individuals together into too limited spaces. The effect of the same circumstance, in giving predisposition to disease, epidemic yet certainly not contagious, I have seen very strongly exemplified, and have therefore a right to infer, that it may produce the same predisposition to diseases that are both contagious and atmospheric. The several diseases above mentioned, and which are mostly those of infancy, are always most general in their attacks, and also most severe in their symptoms, in hospitals and public seminaries; where sufficient attention is seldom paid to

the separation of individuals into distinct apartments. When ophthalmia is epidemic, it is always first met with, and remains longest in such situations; a circumstance, however, perfectly explicable on the greater field given to the operation of the infectious discharge from the eyes of the affected upon those of the healthy.

The appearance of ophthalmia among the crews of ships and in barracks, was often met with long before the introduction of the late destructive and virulent disease. In the army, such an ophthalmia has extended to whole regiments without any appearance of the disease among the inhabitants of the neighbourhood; and while the free intercourse which subsists among the men, as to washing in the same water, using the same towels, and sleeping more than one in a bed, readily accounts for the rapid extension of the disease in the same corps, yet the excessive crowding together of men will often of itself engender inflammation of the conjunctiva; and to an eye predisposed to inflammation, nothing is more prejudicial than the remaining long in a crowded situation. By the excessive crowding of soldiers in barracks, they are subjected to a vicissitude of temperature equal to the difference between the day and night of warm climates, while the exhalation from the lungs produces a plentiful supply of moisture.

Whether, therefore, the cause of ophthalmia exist in some spontaneous change in the state of the atmosphere, or in the immediate effect of its vitiation by over crowding individuals together, this conclusion is certain, that from a number of people so crowded, especially in their dormitories, the constitution is rendered more disposed to be acted upon by the exciting cause, whether natural or thus engendered.

Of many hundred cases of epidemic ophthalmia, it is seldom that one occurs in which actual purulency takes place, though certainly out of a great number the disease will occasionally take on the purulent action, and most probably will give a greater severity to cases receiving the infection from this aggravation of its form. Such I conceive to be the nature of most ophthalmias that have appeared in seminaries. In the year 1810, an ophthalmia prevailed among the troops in the barracks of Portsmouth, Southsea, and Portsea; while the men in barracks on the Gosport side of the harbour had not a single case. Some of them were mistaken for the more virulent disease, and sent under my care; and afforded me an opportunity of pointing out to my assistants the difference in the two diseases. At present, I speak only of the disease, as produced in individuals otherwise healthy; the crowding of sick together produces more violent and specific forms of dis-

ease, of which the conjunctiva is also the occasional seat.

Symptoms.

This form of ophthalmia, like every inflammation of the conjunctiva, commences with a stiffness of the eyelids, fullness of the eye, the feeling as if some extraneous body had got upon the surface of the conjunctiva, which soon, however, goes off; pricking pain about the caruncula lachrymalis; sometimes aridity of the eye; at others copious lachrymal discharge, attended in bad cases with scalding, and mixed with mucus floating over the eye. On examining the eyelid, the lining will appear of a mottled red. The conjunctiva of the eye is generally covered with patches of large vessels; the chemosis is more or less transparent like jelly, and often not surrounding the whole of the cornea. About the fifth day these symptoms decline, when the mucous discharge becomes augmented; during the whole time, the lining of the lower palpebræ does not wholly lose its natural colour. The disease, however, will in some cases go farther; suppurative inflammation attacks the external surface of the conjunctiva, giving it a fleshy and villous appearance, accompanied with a greater degree of chemosis, and with distension of the cornea. In this state, the duration of the disease will be according to the treatment, and so will its consequences;

but as these symptoms all occur in a more aggravated degree in the other forms of purulent ophthalmia, they will again come to be mentioned.

It is a well known fact, that the application of a powerful stimulant to a part in which inflammation has taken place, will, by carrying the excitement of the vessels beyond the action of the disease, put a stop to the further progress of the inflammation. On this principle this form of ophthalmia yields for the most part to any strong stimulus applied to the part, such as spirits or vinegar: snuff blown into the eye has the same effect of curing this inflammation, by exciting a greater, though a temporary distension of the vessels.

A stimulating ointment introduced between the eye-lids at bed time, with the daily use of a solution of sulphate of zinc, is in most cases sufficient to remove the disease, if we are applied to before the individual vessels have suffered much enlargement. In individual cases of catarrhal ophthalmia, arising from exposure to cold, we have often very violent inflammation without any purulency whatever, and requiring a decisive use of the lancet to insure the safety of the eye.

Change of situation, with a free exposure of the eye to the air, by travelling on horeback or in an open carriage, is the most certain way of getting rid of a slight attack of this affection.

CHAP. III.

ON THE PURULENT OPHTHALMIA OF THE BRITISH ARMY.

From whatever cause inflammation of the conjunctiva may originate, when the action is of that nature or degree of violence as to produce a puriform or purulent discharge (ophthalmo-blennorhæa), the discharge so produced operates as an animal virus when applied to the conjunctiva of a healthy eye. Considering the various modes by which such a contact must inevitably occur in the usual relations of life, it must be obvious, that wherever ophthalmia prevails, whether it be the effect of local conditions of the soil, or of the atmosphere naturally or artificially produced, this contagious effect must sooner or later mix or unite its operation with that of the more general and original one, and hence without regard to this property of the disease, its occurrence must often remain inexplicable, and at variance with the more general cause existing in external circumstances. And further, as the disease produced by infection is of a nature more violent and malignant than that produced by the impression of

atmospheric causes, it will in every instance of extensively prevailing ophthalmia occasion two different forms of disease, which, as long as they are considered as one and the same, will produce, according as the one or the other predominates, very discordant results.

The operation of infection, and the wide difference between the disease produced in this way from that simple catarrhal affection which takes place from the cold or moisture of the night air, must be kept steadily in view, in order to explain many circumstances respecting the existence of the disease in Egypt, which are inexplicable by reference to atmospheric influence alone, and to account for the very different degree of violence observed in some cases where its more usual form was mild. Assalini, in the very excellent treatise already referred to, has not only overlooked this circumstance, which must have great weight in enabling us to form a proper estimate of the success of any treatment, however judicious; but, so late as the visit of that eminent surgeon to this country, in the year 1813, he maintained the non-existence of any such quality in the disease. The origin of every case, as it was connected with the one cause or the other, must nevertheless have had the chief influence in rendering the issue fortunate or otherwise to the patient. Assalini found, and has described

the disease in Egypt as one by no means of an inveterate nature, and whenever it occurred from exposure to the indigenous cause of the complaint, the treatment which he recommends, viz. stimulating collyria, and on which Beer bestows his unqualified approbation, would be very adequate to the end.

While Assalini, however, speaks of the success with which he treated the disease as uniform, there occurs ample evidence of its destructive issue in the numerous consequences which he describes. From the perusal of that treatise, it appears manifest that the treatment adapted to the catarrhal form of the complaint, was found very unequal in other cases which had been produced by infection: for the author observes more than once, that the most severe and intractable cases did not occur in men who had been the most freely exposed to the night air, but in those previously admitted into the hospital on account of their wounds, and who, I must assume, received the disease by infection, and who, he says, suffered under a more dreadful disease than that for which they were admitted.

In a country, the physical peculiarities of which are such as to suggest many causes of ophthalmia (to those who will not distinguish between disease of the conjunctiva and of the eye itself), the operation of contagion is one which is more likely to be overlooked, though we cannot but feel astonished

that its existence should not appear to be suspected, or at least not practically attended to by the natives, who, in spite of the most obvious proofs of its communication from one to another, are satisfied with a belief, that it is either a dispensation of Providence, or the inevitable consequence of the climate. The unfortunate continuance of the disease, both in the English and French armies after their return home, and the repeated occurrence of a similar one in the troops of this country has, however, spoken the fact in language too strong to be misunderstood. I shall now enter upon a brief narrative of the prevalence of purulent ophthalmia in the British army, and an examination of the principal facts connected with the operation of the local virus which the disease itself generates.

If any belief were entertained by the officers of the British army, during the first expedition to Egypt, that the disease was contagious, it was of a nature very vague and indefinite. Combined as its operations necessarily must be in that country with other exciting causes, there would be more difficulty in the first recognition of the fact. But the continuance of the complaint with the troops, after their departure from the country, could scarcely fail to lead to the obvious conclusion of its possessing a power of propagation. Before the disease reached this country, the opinion of its being

contagious, was adopted by several. Dr. Edmonstone in the account which he published of the disease, as it appeared in the regiment to which he was Surgeon, after its return to England, first made the public acquainted with the fact of the disease being communicable. In an account of the Egyptian ophthalmia, as it appeared in this country, printed in the early part of 1807, I first established that the communication of the disease was *exclusively* produced by the application of the discharge from the eyes of the diseased to those of the healthy. Although data similar to those which I then stated, and on which my conclusion was founded, have been repeated in some recent publications on the disease, very little has been added to explain the nature or determine the laws of this animal virus.

The opinion, I believe, no longer exists, that the disease is communicated through the medium of the atmosphere or by sympathy. I may nevertheless state, as a negative proof against the existence of any such powers, that during the whole time I have had the management of the ophthalmia hospitals, there never has been an instance of any medical officer contracting the disease, although exposed to what might be supposed the greatest concentration of any contagion that can emanate from the system in the worst

state of the complaint. Two orderlies only of the whole servants in attendance on the sick, contracted the disease, and both in consequence of the accidental application of the virus.

In the account of the disease already quoted, I related the progress which it made in the fifty-second regiment of foot, that being the corps in which it first presented itself with any alarming degree of violence in this country, about two years after the return of the army from Egypt. It was my intention on this occasion to have drawn its history, supported by official documents from that period, through its various ramifications, until its expiration as a predominant disease during the Peninsular war. But as a minute detail of its prevalence in different corps, would be only a repetition of similar facts and would lead to no practical utility, I shall, therefore, content myself with a very general view of its introduction, progress, and decline.

The British army which formed the first expedition to Egypt, left that country in three divisions. Great part of the whole touched at Malta, and a considerable portion also at Gibraltar; at both which places ophthalmia not only continued to present itself in the regiments which had brought it with them, but was communicated at the former place to several women, with whom the soldiers associated; and at Gibraltar, it be-

came from that time by no means an unfrequent complaint among the troops who had never been in Egypt. On the whole, however, the climate of Gibraltar has proved rather favourable than otherwise to the amelioration of the complaint. Had the situation been in every respect the opposite to what it really is, with regard to dryness, there can be no doubt, but the disease would have there reached the highest degree of prevalence and malignancy.

From Malta and Gibraltar, the greatest part of the army proceeded to Great Britain and Ireland. In two regiments of Fencibles disembarked at Portsmouth, the disease continued to present itself from the time of their landing, until they were disembodied, which took place a short time afterwards. The Guards brought home with them many chronic cases of the disease, and many in whom its consequences still rendered them fit subjects for medical treatment. These cases were carefully separated, and the disease in a short time ceased to appear.

The regiments disembarked in Ireland, having been placed in the same barracks and garrisons with the Irish militia regiments, the infection appears, from such evidence as I have been able to obtain, to have been communicated to them. The principal part of my knowledge of this part of its history, I have gleaned from men

who when belonging to the Irish militia, had contracted the disease under the circumstances just mentioned, and by afterwards entering into the line, came under my care in consequence of a return of the disease. If the disease existed at all in England, it seems to have been entirely overlooked till the summer of 1804, when it appeared with alarming violence, in the second battalion of the fifty-second regiment, at that time stationed with the light infantry division in barracks near Hythe in Kent. Not a man of this battalion ever had been in Egypt, and it was entirely composed of a body of volunteers received in one draft from the Irish militia, and very shortly after their arrival at Hythe the disease made its appearance. It continued to disseminate itself more extensively in this regiment during the remaining part of 1805; and in the following summer of 1806 it also began to prevail in the first and second battalions of the 43d regiment, and the first, second, and third battalions of the 95th, all stationed at the same place, and under the same command. Whether the disease was spread from the battalion in which it first commenced, or was derived from the same source, that is the Irish militia, of which the others were equally composed, it would now be difficult to determine.

The battalion in which this renewal of the infection first shewed itself in this country, was the

second of the 52d, and a very considerable number of cases had occurred in the first battalion of this regiment when it embarked with the expedition under the command of its Colonel Sir John Moore, for Sicily, in 1806. From the time of their landing in Sicily the disease continued very much to cripple this otherwise fine battalion. Part of the army of Sicily was detached to Egypt, and on its return to Sicily a fresh stock of the infection of ophthalmia was brought with it; but the disease, or an infectious ophthalmia of the same form, was in the first instance carried to Sicily from this country by the first battalion of the 52d regiment. I have more particularly noticed this ramification of the disease as the most extensive that has occurred out of the kingdom, and where it became again united with a fresh importation from Egypt. From this station alone, I believe more than one hundred and thirty cases were sent home totally blind.

When the disease had existed for some time in the light infantry brigade, composed, as I have already stated, of the 52d, 43d, and 95th regiments, stationed in Kent, it broke out in other regiments which had no communication with the former, but had formerly suffered much from the disease in Egypt, though till this period it had remained either altogether dormant, or prevailed in an extent so limited as to escape attention. Of these

corps the 28th, 54th, and 89th, were those in which it became most violent, and in which, if really of Egyptian origin, it might have been expected to have shewn itself first.

Three hospital stations were established for the exclusive reception of those affected with the disease, towards the latter end of 1807, to the superintendance of which I was appointed. The numbers were chiefly composed of men from the regiments already mentioned, but in the summer of 1808 it contained no less than nine hundred cases, consisting of detachments from more than forty different corps. Previously to the sailing of the expedition to Walcheren in 1809, the number of acute and highly purulent cases was also very great, but as they were received in an early stage of the disease, there was little or no eventual loss, and from that period the disease continued to decline.

There are two important questions which arise out of the foregoing history of ophthalmia in the British army. The first relates to the length of time during which the disease has at different periods lain dormant, and especially between the return of the troops from Egypt, and the breaking out of the disease in the second battalion of the 52d regiment of light infantry. The second is, to what causes are we to ascribe the visitation

of this calamity to such an extent in the best regiments in our service, while the French army, according to all evidence, has had no serious experience of the complaint?

A satisfactory solution may be given to the first from the nature of the disease. It will be shewn that long after the eye seems to have recovered its natural and healthy appearance, the complaint nevertheless exists, and is liable at all times to a renewal of its infectious quality. If circumstances be favourable to progressive recovery, relapses may cease to occur for a great length of time; but, if in a single case, a renovation of the infectious discharge take place, the crowded state of soldiers in barracks, and the free intercourse subsisting among men so situated, render its communication almost a necessary consequence. When a man can commit the crime of applying the matter of infection to his own eyes, it cannot be doubted but that he will be desirous of infecting his associates also, as a more effectual screen to his own guilt.

The comparative exemption which the French army has experienced from the disease since the time of its leaving Egypt, where (by its longer residence and consequent exposure to the exciting causes in that country) it must have contracted it to a still greater extent than the British army, is not, I must confess, so much a matter of surprise

to me as it must be to all who have not had the same interest in considering this complaint in all its different relations.

It was the misfortune of the British army on its return from Egypt to be cooped up in barracks at home, where every facility exists which can favour the communication of an infectious disease. In these barracks, as I have already stated, crowded to excess; the bedding, the water in which the soldiers wash themselves, and the towels which they use in common, presented so many ways of bringing the virus into action, that sleeping or waking, it was nearly impossible that its contact could be avoided. It is to be wished that I could here conclude this part of the argument; but, to arrive at the truth, it is necessary to take the effect of certain moral causes also into calculation.

At the time when the disease first appeared in this country, and in the corps which first suffered from so unlooked for a visitation, a new system of drill was then in full operation, and carried to an extent which will always prove more irksome to British soldiers, than the most fatiguing duties of an active campaign. I speak of that system of drill, and the discipline required to enforce it, by which the movements of the Light Infantry Regiments (those in which ophthalmia appeared first, and in which it has prevailed most), were brought by the unremitting efforts of the lamented

Sir John Moore, to a degree of perfection unequalled perhaps by the troops of any other nation. In the detail of this system, as in most human institutions, there were many exceptionable things which might have been omitted without any infringement on the drill necessary for the acquisition of the tactics. I do not mean here to offer an opinion with respect to the extent to which attention to dress and appearances may be carried with real benefit to the service; the good of the service being always consistent with the health of the soldiers; but I must be much mistaken if in the instance of which I am now speaking, the punishments attending the slightest deviation from a complication of dress, (by no means adapted with due regard, either to the health or the comfort of the soldier,) added to the unceasing duties of the drills themselves, did not produce in the minds of the soldiers a very strong reaction, insomuch, that many were willing to exchange what they considered the torture of the discipline for confinement with ophthalmia.*

The French army, after its return from Egypt, instead of being confined to barracks, and harassed by a fastidious discipline, proceeded from conquest to conquest, bivouacking in the field, or quartered on the inhabitants of the countries

* On this head see Appendix.

which they subdued. The means, therefore, of disseminating the infection, if it existed, did not occur to the same extent. The full career of victory in which they moved, gave no room for discontent, or a desire to avoid duty by artifice.

The disease followed the British troops to Sicily, because there the same discipline and the same system of barrack accommodation were preserved as at home. But when the same troops were employed in active service on the Peninsula; when the pernicious intercourse by means of bedding, and other usages of barracks were succeeded by a less promiscuous intercourse, and when the operations of an active campaign superseded the irksomeness of their former duties, there remained neither so many channels for disseminating the disease, nor a desire to make it the means of avoiding duty.

From the number of cases which occurred previously to the sailing of the several divisions of the army, first sent to Spain and Portugal, it was apprehended, that, on the return of that army, after the hardships of the campaign which terminated with the battle of Corunna, an extension of room would be necessary at the Hospital for Ophthalmia, in a proportion equal to the other sick of the army. I felt, however, strong in an opinion which I had given, and it was fully

verified by the event, as a single case did not occur of the disease, and it was not till after the troops had been above six months in barracks that it again became prevalent. The expedition to the Scheldt then took place, and no ophthalmia followed; and ever since the disease has been kept aloof by the active operations in the Peninsula. The infection, I apprehend, however, still exists;* and if a large portion of the army be again kept unoccupied, and if more active measures be not pursued than hitherto, the disease may once more appear amongst us.

Although it is seldom that the state of the atmosphere in this country becomes the sole cause of exciting purulent inflammation of the conjunctiva; yet, during the prevalence in the army of this disease, as has been above related, the aggravation of its symptoms has been in a remarkable manner connected with the state of the weather, and certain local peculiarities. The influence of a humid atmosphere in aggravating the disease, and causing relapses of the complaint where it has before existed, I very early pointed out,† both as arising out of the marshy nature of

* 1812.

† Vide Account of the Ophthalmia, as it has appeared in England since the Return of the British Army from Egypt, in the Edinburgh Medical and Physical Journal, vol. iv.

the soil, in particular places, or connected with the more general changes of the atmosphere. Those places of which I can speak from accurate observation, where the disease shewed itself with most violence, have been all of them most decidedly of a marshy description. The disease first assumed its violent and characteristic symptoms in barracks, either in or on the borders of Romney Marsh. Its next appearance under this form was at Feversham, and Hilsea; both of them low situations, and surrounded by ditches, and till very lately proverbial for the production of ague. Some of the worst cases were also received into the depot from low situations in Essex. The disease presented itself in the First Regiment of Foot, stationed at the castle of Edinburgh, but no instance of particular severity occurred, although a very considerable number were admitted into the hospital. The high and salubrious situation of that place is sufficiently known. The disease, however, still existing in the regiment, it afterwards broke out at Maldon, in Essex, and since the first appearance of the disease in 1805, it has no where produced such cruel ravages, or sent so many objects of its violence to the hospitals. At my suggestion, a gentleman well versed in the treatment of the disease was sent to superintend the practice, which he knew

could be depended on, and he succeeded at last in breaking its violence, and eradicating it for that time at least, from that particular corps.

At the barracks at Aldwick, which formed one of the stations of the Ophthalmia Hospital, and the situation of which is particularly damp, ten cases of relapse occurred for one at Selsea. In many instances, when the disease has evinced little disposition to assume its characteristic violence, and when its nature has consequently been doubted, on the setting in of wet weather, the suppurative form of inflammation has come on with the utmost severity. The following, as mentioned in the account of the disease published in 1807, are given according to the exact relation of Mr. Redmond the surgeon. "The ophthalmia had affected upwards of thirty men, without offering any "thing very alarming in its appearance. The "patients were lodged under canvas, to cut off as "much as possible their communication with the "barracks. The night of the 24th of September "proved so wet, that the channels dug round the "tent were overflowed, and the canvas was so "wet, as to oblige the men to crowd into the "centre, where with difficulty they kept them-"selves dry. In the succeeding morning, every "case had assumed the appearance described, "as attending the utmost violence of the disease,

"presenting such a scene of confusion and dis-"tress as can hardly be imagined."

During the convalescent state of the disease, the sympathy, with the weather, which most affections depending on a weakened or irregular vascular action of a part so strongly exhibit, is remarkably conspicuous. The eye, after an attack of purulent ophthalmia, is for many months, often for years, found to sympathize with a moist state of the atmosphere, and to be affected by even less sensible changes. Other chronic inflammations, or effects of inflammation, such as rheumatic pains, gunshot wounds, &c. may perhaps be equally influenced, but they shew this effect of the weather less strikingly. The greater accumulation of blood which takes place in the debilitated vessels of the eye, not only produces corresponding uneasiness, but by preventing a free return from the vessels of the cornea, produces besides the stimulus of distention, a temporary diminution of vision, as uniformly expressed by all the patients that have come under my care. This state is not always most observable in rainy weather, being often relieved by the fall of rain, but when the atmosphere has been for some time heavy and loaded with moisture, and when evaporation from the surface may be observed to proceed slowly in consequence of the air being already saturated. The observation is of some

practical utility in treating cases of opaque cornea, as more care is required in the application of remedies when the atmosphere is in an unfavourable condition.

Without pretending to decide whether the purulent and contagious ophthalmia, whose history I have now detailed, were actually derived from the disease contracted during the first expedition to Egypt, or whether a similar inflammation were first engendered by a vitiated atmosphere, operating upon the system generally, or the eyes locally, it is sufficient to know, that in whatever way produced, it possessed in itself the power of farther communication. On this head any precise knowledge is highly desirable, and the principal facts may be classed with advantage under the following heads.

I. The degree of contact, or the quantity of virus, necessary to produce the disease.

II. The time before the disease makes its appearance after infection.

III. The length of time before the discharge from the eyes ceases to be infectious.

IV. The susceptibility of a person recovering from the disease to receive fresh infection.

V. The effects of the virus on ulcerated surfaces, and on the other mucous membranes.

With respect to the first, I believe that the smallest conceivable portion of matter applied to

the conjunctiva, or the tarsi, will produce the disease; a fact which numerous cases have established. Some have occurred in which there can be no doubt of the disease having been produced by the matter, even after it had been dried upon the clothes worn by patients labouring under the complaint in its purulent stage.

Whether the lachrymal discharge before it is mixed with the purulent secretion, be capable of exciting the disease, I cannot decidedly say; but I am rather inclined to think that it would have this effect.

The time which elapses between the application of the virus and the appearance of the disease, is shorter than occurs in gonorrhœa, or rather, perhaps, from the nature of the part, the effects are more early visible. In the third volume of the Transactions of a Society for the Improvement of Medical Knowledge, a case equal to an experiment is stated by Mr. M'Gregor, Surgeon to the Royal Military Asylum, in which the disease took place in twelve hours after the application. I have reason to apprehend that the diseased action takes place iu many cases in a still shorter time.

With respect to the time when the discharge ceases to have a power of infection, it must, without the aid of direct experiment, be difficult to decide. I shall offer some observations on this

head, when treating of the convalescent state of the disease.

The fourth head I can answer in the affirmative, without any hesitation; and therefore in military practice, it is necessary to distinguish a fresh infection from a relapse, and when a man is convalescent from the disease, he ought in every respect to be considered in as much danger of a fresh infection as if he had never had the disease.*

In the section on Gonorrhœal Ophthalmia, a fact will be mentioned shewing the power which the virus has of infecting the urethra of another person, at the same time that it is innocuous to that membrane in the same person. A circumstance, however, which must appear at variance with this observation, is the communication of the disease from one eye to the other. There is not one case in a thousand in which one eye only becomes affected; either therefore we must suppose the matter of infection to be applied to both eyes at the time of receiving the disease, or that the matter

* The great want of hospital accommodation when the disease was at its acme, rendered relapses from this cause very frequent, and in estimating the success of treatment at the Ophthalmic General Hospital, the consequences of this want of accommodation must be taken into account; but in compensation and since the disease has disappeared, sufficient zeal has been displayed in building and fitting up an hospital with every possible advantage.

from one eye has the power of infecting the conjunctiva of the other, contrary to the nature of mucous membranes; or else that it occurs by a very great peculiarity of sympathy. Against the first and last of these suppositions, however, I must mention, that in some cases, in which the disease having attacked one eye, I ordered the patient to keep the sound eye bound up, in order to prevent contact with the discharge from the diseased one; and although in each case both eyes became ultimately affected, the disease for a long time was confined entirely to the eye first attacked.

Symptoms.

The first appearance of inflammation after the application of the virus is observable in the lining of the lower eyelid. It assumes first a mottled appearance, and then a fleshy redness. A little mucous is generally present at the doubling of the conjunctiva at its lower part. The disease I know from observation may remain in this state for twelve hours before it invades the conjunctiva covering the eye; sometimes it may be longer; and in some cases where the contact of the virus has been slight, or removed by immediate washing, the disease never went farther than producing the redness of the lining of the palpebra. In sclerotic inflammation the lining of the eyelids preserves, in some degree, its natural whiteness, especially just under the tarsi for days and weeks.

The progress of the inflammation when it extends from the conjunctiva of the eyelid to that covering the globe of the eye, is often so rapid as to elude any distinct observation, but frequently it advances more gradually, preserving a defined line, till it extends over the whole membrane, as far as the cornea. No part can be said to be more vascular than another, as the whole seems equally injected, and no space unoccupied. The disease is often thus far advanced before the attention of the patient is so much excited as to make him complain; a certain degree of stiffness being sometimes the only sensation which accompanies it. The first and chief uneasiness in this stage of the disease, is described as arising from the feeling of dirt or sand rolling in the eye. This sensation is not constant, as it comes on suddenly and as suddenly departs, confirming to the patient the idea of something extraneous being lodged in the eye. I have always observed, that its attacks are in the evening, about the time of going to bed, or very early in the morning. Their duration varies; sometimes an attack abates in an hour, and sometimes continues the whole night; those coming on in the evening being always the most severe.

This symptom requires particular attention, as its accession is a certain index of the disease being on the increase. From the observations I have

already made, its exacerbations and remissions are easily explained. When a vessel on the globe of the eye is first injected, and rendered turgid, it excites an uneasy sensation in the conjunctiva of the palpebra, the same as if it moved over a particle of sand or other extraneous matter. As the tone of the vessel diminishes, and the lining of the eyelids becomes accustomed to the new feeling, the painful impression ceases. A farther increase of the turgidity of the vessels already distended, or the distention of others, serves to excite afresh this feeling of uneasiness. The time at which I have said that this symptom generally comes on is when the patient is preparing for sleep, because he is then confined to a closer atmosphere; and not only is the eye deprived of the beneficial effects of the open air, but the temperature is farther increased by the closing of the eyelids in the attempts to sleep.

The first stage of the disease may be therefore characterised by its great and uniform redness, without that pain, tension, or intolerance of light which accompanies most other forms of occular inflammation. Exactly the reverse of which takes place when inflammation affects the sclerotic coat.

From the beginning of the operation of the virus, a disposition to puffiness in the cellular texture between the conjunctiva and the globe of the

eye. This puffiness often suddenly swells out into a state of complete chemosis, and at other times it makes a more gradual approach to the cornea, advancing equally on all sides; the close attachment of the membrane, at this part, causes the swelling (as it were) to double over the margin of the cornea. While effusion is thus taking place upon the eye, œdema is likewise going on beneath the integuments of the palpebræ. This effusion ought to be considered as perfectly continuous with the chemosis arising from the internal surface of the conjunctiva, and following its reflection on the eyelids.

To the œdema of the palpebræ, there is no other resistance than what the integuments afford; and, therefore, in a short time, it forms a tumor of astonishing magnitude, and the external swelling may by its pressure prevent the chemosis from acquiring the magnitude which would otherwise occur. This enormous tumefaction of palpebræ is generally consentaneous with the complete formation of the chemosis, which is when it has reached the cornea and surrounds it. In proportion as the integuments of the palpebræ by yielding to the œdema swell out, they drag the tarsus to which they are attached inwards, producing inversion of the eyelid, and the integuments of the upper and lower eyelids meet, forming a deep sulcus between them. To examine the eye, it is

therefore necessary first to introduce the finger to the bottom of the sulcus, and then by separating the swollen eyelids to bring out the inverted cilia.

Unless our treatment have an immediate effect in reducing the external œdema, but few cases admit of any very minute examination of the eye itself.

With the accession of the external swelling the discharge, which was before moderate and consisted of pus floating in the watery discharge, now flows in a continued stream of yellow matter, which, diluted with the lachrymal secretion, greatly exceeds in quantity that derived from the most violent attack of gonorrhœa. The clothes, and any thing within the reach of contact, soon become embued with the matter, the smallest particle of which is capable of producing infection.

Although the tumefaction may be, at first, farther advanced in one eye than the other, it generally reaches its maximum of height in both about the same time. The patient reduced to a state of great uneasiness by the irritation of the swelling, and by its confining the discharge, begins now to suffer attacks of excruciating pain in the eye itself. This is chiefly what indicates the mischief going on, and from which the patient must be immediately rescued, in order to save the organ. Here it is enough to observe, that the medical adviser must be careful how he allows himself to be lulled into security by any remission or pallia-

tion of this symptom. An occasional sensation, as if needles were thrust into the eye, accompanied with fullness and throbbing of the temples, often precedes the deeper seated pain. This last is often of an intermitting nature, and a period of excruciating torture is succeeded by an interval of perfect ease. Under the latter form I have met with it in the greatest number of cases, and the exacerbation and remission have often occurred with great regularity. Sometimes the pain shifts instantaneously from one eye to the other, and is seldom or never equally severe in both at the same time; and sometimes instead of the eye, it occurs in a circumscribed spot of the head, which the patient describes by saying, he can cover the part with his finger.

Sooner or later one of these attacks of pain is terminated by a sensation of rupture of the cornea with a gush of scalding water, succeeded by immediate relief to the eye in which this event has happened, but generally soon followed by an increased violence of the symptoms in the other. This first sensation of rupture is, when the disease is left to improper treatment, often followed by a second and a third; till, exhausted by its own violence, the attacks become shorter and less severe, not however till after the lapse of many weeks and even months do they altogether cease. During this stage of the disease, there is seldom

the slightest alteration of the pulse unless the lancet have been freely employed. The patient's general health is little impaired, his appetite continues natural, but sleep almost totally forsakes him.

As the pain abates, the external tumefaction subsides also, and a gaping appearance of the eyelids succeeds. This may be termed the third stage of the disease, and it is represented in plate II. The cilia which before had been pushed inwards are now separated and stand outwards. The previous inversion of the cilia may be explained by comparing the palpebra to a sail bent to a rope; the more the sail is distended the cord is drawn upwards and inwards.

The swelling of the second stage having abated, the eyelids are prevented assuming their natural state, in consequence of the granulated state of the conjunctiva which lines them; and now eversion more or less takes place. This in general proceeds, however, no farther than is represented in the figure plate II. Between the state there reresented and a complete eversion as on figure 4, plate I, there is every degree of a diseased or granulated state of the inner surface of the palpebræ. In some cases it disappears rapidly, and of itself; in others it forms an inveterate disease, and combined with some degree of sclerotic inflammation becomes the cause of opaque cornea.

The pain of the second stage of the disease arises in part, from the destructive changes which

have commenced in the cornea, aggravated by distention of the eye, consequent upon an augmented quantity of the aqueous humour. The formation of that fluid I have already hinted, may take place through the medium of the ciliary processes, and the appearance of the cornea gives no reason to suppose, that its internal surface partakes of the inflammation, or that the aqueous humour is increased by any morbid effusion. The distention seems entirely owing to an augmented activity in the secreting vessels; and these certainly are situated in the posterior chamber. Neither does there appear any reason to warrant the idea, that the ulceration ever proceeds from within, outwards. But the distention of the anterior chamber probably favours the escape of the aqueous humour, sooner than it would otherwise happen.

The swelling, and the purulency prevent us from making any very accurate examination to ascertain the progress of the ulcer. The account I have given of it, in a former chapter, is an analysis of what takes place in ophthalmia. When any large portion of the cornea sloughs, an adventitious, and vascular membrane is often produced, which finally forms a staphyloma. In some few cases, I have seen the lens and its capsule, exposed without any external covering whatever, and for a short time, the patient saw every thing with wonderful

accuracy; but as soon as the capsule gives way, the lens and more or less of the vitreous humour escape, the eye shrinks, and the cornea contracts into a small horn coloured speck. This total destruction of the globe of the eye, generally insures the safety of the other, and renders it less liable to be affected by future attacks of inflammation. When one eye is lost by staphyloma, and the other remains useful, it is well to do what nature has left undone; and instead of attempting to reduce the sac by puncturing it, at once to lay it open and extract the lens.

Treatment.

In deciding upon the plan of treatment to be adopted in the first stage of the disease, we are chiefly to consider the nature of the second, the probability of its accession, and the violence of its symptoms. The disposition of the disease to pass into a state of suppuration, cannot be prognosticated with perfect certainty, but by the symptoms of its actual approach. The probable severity of the disease, must be, in some measure, estimated by the general character it may possess, at the time and place where it prevails.

I have already mentioned the efficacy of pungent, or stimulating applications, on the first accession of milder ophthalmia. There is no doubt, but that they also prove in many cases efficacious, in checking the formation of the suppurative inflammation, when it would otherwise super-

vene. The practice of the Hindoos, as has been seen in the history of the Purulent Ophthalmia already given, is to apply lime juice and powerful astringents. In other warm latitudes, the natives generally squeeze some pungent vegetable juice into the eye, on the first attack of the disease. In the event, however, of such remedies not proving successful, they may very much augment the disease, and accelerate the establishment of the second stage; and, as purulent ophthalmia has hitherto existed in this country, I consider the employment of these as hazardous in the extreme. The liquor plumbi acetatis, in its undiluted state, is the application which I can recommend as the most efficacious, and at the same time incapable of doing harm in this, and in every stage of purulent ophthalmia. The sensation it occasions is that of some dust or sand having got into the eye, which lasts from ten to twenty minutes; there is generally a copious lachrymation, and the eye afterwards feels cool, and the sight is clear. Until the patient complain of another attack of the sensation of gravel in the eye, the appearance of mere redness of the conjunctiva, how great soever that may be, is of less consequence; it is sufficient with this simple treatment, to watch the accession of the next symptoms, that they may be arrested the moment they appear.

Venesection performed, as I am about to desribe, is the remedy to which we may trust with perfect confidence, for this very desirable result. Prejudices are no doubt to be overcome, before this practice can exhibit its beneficial effects to their fullest extent; but a single case will afford to any observing person sufficient proof of its efficacy. The importance of the organ, from which it is an object to ward off the great suffering and imminent danger attending the second stage of purulent ophthalmia, might render proper the employment of a remedy so decidedly efficacious, even with some risk to the system; but that no such consequences are to be dreaded, the proofs I shall adduce, will satisfactorily shew. Those who know my practice best, will not, I am confident, accuse me of either a rash, or indiscriminate use of the lancet.

When inflammation has its seat in the sclerotic coat, general bloodletting may for the most part be dispensed with, and even when employed to the greatest extent, the same benefit does not ensue. In the purulent inflammation of the conjunctiva, however, although some good may be derived from depletion, yet a perfect command over the disease, depends less on lowering the system, than on the temporary cessation of arterial action by the syncope, which it becomes the object of the operation to produce. This practice,

besides its efficacy, will accomplish the cure with a much less expenditure of blood, than is occasioned by the repeated bleedings generally had recourse to, where this method of rendering one equal to the cure of the complaint has been neglected. Sometime before the approach of faintness, the redness of the conjunctiva for the most part disappears, but this is no security against the return of the disease, if the flow of blood be stopped, without deliquium animi succeeding. From this fact, we may infer how far every other mode of diminishing vascular action, falls short of the effect produced by a state of syncope. Wherever the lancet has been employed in the early stage of the disease, without being attended with the happy result of rendering further treatment unnecessary, very probably the loss of a single ounce more, would have saved all the difficulty of carrying the patient through the suppurative stage of the disease. Of the cases admitted into the Ophthalmia Hospital, the only ones which have given any trouble, were invariably those in which for want of decision or dexterity, or from some other accidental circumstance, the flow of blood was stopped before this necessary effect was produced.*

* Owing to the distance between the stations of the Hospital, it was not in my power to be present on every occasion, where the lancet was necessary; it never, however, was used twice in the same case, without my knowledge or concurrence.

As the appearance of the eye is not of itself a sufficient guide for directing the use of the lancet, the painful sensation described as belonging to the early stage of the disease is the proper indication for having recourse to it; for as often as that symptom occurs the surgeon may be assured that the disease is advancing.

I entertain so favourable an opinion of the effects of a free exposure to the atmosphere, that although no person can better appreciate the importance of decisive measures in the early stage of the disease, I would in favourable weather risk the delay of a journey on foot or horseback, in a carriage, or a voyage by sea, provided the eye be freely exposed to the air. Even when the second stage has commenced, by the appearance of a chemosis and purulent secretion, I have never seen any other than the best effects to attend a change of place. Soldiers who have commenced a march with the disease completely formed, though exposed to heat, dust, and fatigue, and not abstaining even from intoxication, are invariably better at the end of the journey than when they set out. The instances of this fact, which I could adduce from my own observation are innumerable; and I am informed by Mr. Murray, Surgeon to the Forces, that so strongly did he observe the beneficial effects of exposure to the air, when a great number of men

affected with the disease was sent under his care to the interior of Sicily, that he was induced to march them from one place to another, with a view solely to the good effects which he saw result from it.

In 1809 I was consulted by the Right Honourable the Commissioners of the Military Asylum, in conjunction with Sir Lucas Pepys, Mr. Keate, Mr. M'Grigor, and the late Mr. Ware, on account of the extensive dissemination of the disease among the children of that establishment; and being aware of the difficulty of getting convalescents sufficiently separated from the healthy (the importance of attending to the last stage of the disease not being sufficiently understood), and knowing the beneficial consequences that would result to those labouring under the disease, I proposed, when called upon for my individual opinion and advice, to have all the children affected placed on board a transport, and there to be detained, or conveyed to a distant barrack prepared for their reception. Had this measure been adopted, I am perfectly convinced, that without very great negligence, the disease would in a very short time have been entirely eradicated from that important establishment.

A voyage being productive of good effects in cases of adults, I had reason to conclude that it would have been still more sensibly felt by

younger subjects, on whom sea sickness would probably operate in addition. As many very bad cases have occurred among soldiers crowded together in transports, it is necessary just to observe, that while a sea voyage to a person labouring under the disease may very powerfully promote convalescence, yet when a number of men are crowded together in the hold of a vessel, if any of them happen to be in an infectious state of disease, it must be very quickly communicated to the healthy; and as in bad weather soldiers on board of transports are kept below, instead of enjoying the advantage of a pure atmosphere, they are exposed to all the evils arising from the want of ventilation.

After my publication in 1807 of a sketch of this disease, I was employed in making trial of such substances as from their known properties might be deemed likely to afford a specific remedy for subduing this erysipelatous form of inflammation, without risking in any case the loss of an eye by neglecting the use of the lancet. The tribe of narcotics was tried in succession, without exhibiting any very sensible effect in abating its violence. The recently expressed juices of foxglove, belladona, and henbane, were most extensively tried; the two latter applied to the eye itself have considerable sedative power, but neither was of much efficacy in reducing the swelling or

purulency of the conjunctiva. After some time the tobacco was suggested to me by an assistant surgeon, who had applied it in the form of an ointment to the eye in the early stage of the disease, when its stimulant effects appeared to check the rapidity of its progress. It instantly struck me that the infusion of this plant was the remedy of which I was in search, and the first preparation which I tried so completely answered my expectation, that I have ever since adhered to the same formula. It possesses the valuable properties of acting as a powerful astringent, restraining the purulent discharge, and diminishing the œdema or external swelling of the palpebræ; at the same time that its narcotic qualities often relieve the pain and the perpetual watchfulness which the largest doses of opium cannot subdue. The infusion of two drams of the leaves to eight ounces of water is so powerfully astringent as to corrugate the skin of the fingers when they have been for some time immersed in it. The proper time for the application of the remedy is at night. When a number of men have landed at the Ophthalmia Hospital in an advanced and neglected state of the disease, with their eyelids closed, and matter flowing from them in a continued stream; I have often had the satisfaction of hearing unobserved their expressions of satisfaction for the

relief which they have experienced, when the usual treatment had been finished by the application of this remedy for the night.

Again I must speak of the application of the undiluted liquor plumbi acetatis, as the most efficacious of all applications that can be made to the surface of the conjunctiva when in this high state of erysipelatous and purulent inflammation. While it contributes greatly to abate the inflammation, it lessens the discharge; and by coagulating the matter, it cleans the eye much more effectually than can be done by any mode of washing. Its application does not produce so much smarting as the acetic acid with which it is made, and its sedative effects are much greater.

In case the nicotiana prove irritating to the surface, the following infusion forms a good substitute.

℞ Pulv Gallar:
——— Opii āā ʒi
Croci sativ: stigmatorum ℥ss
Aquæ ferventis O-I
macera per horas quatuor et cola.

Even with these powerful applications the lancet is still to be regarded as the sheet anchor, and only means of preventing the destruction of the cornea, to a greater or less extent, whenever attacks of pain of the eye, or of the orbit, indicate

the internal disease to be still unsubdued. The state of the eye being in general hidden from observation, the occurrence of pain is the proper indication for having recourse to the lancet; and if we trust for relief to any other means, the consequence will most invariably be, that the cornea will give way at the spot which has ulcerated. Syncope possesses an absolute control over the disease, and will prevent this accident from taking place, if boldly persisted in.

One of the most distressing peculiarities of the complaint, is its tendency to shift its violence from one eye to the other, the pain being seldom present with equal severity and urgency in both eyes at once; so that when we have successfully repelled the danger from one, the same measures are required to save the other. When the disease is of longer duration, local bleeding by means of cupping becomes more serviceable in checking the progress of such consequences as have already taken place, and which general bloodletting is too late to prevent. The eye at the time must also be more carefully cleaned by the injection of tepid water, or any gentle astringent vegetable infusion, or weak metallic solution, and afterwards wiped dry.

When the discharge continues acrid and scalding, blisters applied to the nape of the neck and behind the ears prove serviceable. The pain which is liable to occur in circumscribed spots of

the head, chiefly after staphyloma has taken place, is relieved by the application of the liquor ammoniæ to the part. Particular cases will occasionally occur, which require a different treatment, or some modification of that here mentioned; but I think it presents a general outline of all that is efficacious in preventing ulceration of the cornea from taking place.

In order to appreciate the incalculable extent of the benefit, which this practice has rendered to the public, and to the unfortunate subjects of the disease, it is necessary to look back upon the destructive ravages committed, at all stations, before it was known, or where it has been since neglected or partially followed; and then consider what must have been the crippled state of the army, and what must have been the burden to the public, had but the twentieth part of the loss attended the practice of the Ophthalmic Depôt. The practice was recommended by Mr. Knight, in his official capacity of Inspector General of Hospitals. Although it may now appear little more than extending to a numerous set of cases a practice known before to be the most powerful in subduing membranous inflammations, yet, under all the circumstances of the case, and especially with the want of success which attended what was even considered a free use of the lancet, its introduction on the principle here inculcated was a

measure which required some decision to execute.* The time for employing venesection with the

* The following case, given by Wiseman, made an early impression on my memory, and as it is perhaps one of the earliest recorded cases of the use of venesection ad syncope, although well known, its insertion here cannot be misplaced: "But "coming near his chamber, I found him hollowing. It troubled "me what to do. I knew his bleeding had much relieved "him, but the people, as also my assistant, disliked my so often "letting him blood, and was wont abusively to say, now you "shall see our master let him blood again; they concluding "that I would be the death of the patient. However, I re-"solved to bleed him once more, and no more. This I de-"clared, with the necessity of doing it, and accordingly opened "the same vein again, and held a white stone porringer to re-"ceive the blood, which flowed with a sprightly stream, the "patient lying quietly the while upon his back. I put the "porringer into my assistant's hand, and seeing the blood flow "with much vigour, I catched up hastily a pewter porringer, "purposing to take a little in that. In bleeding these veins in "the neck, we usually hold the porringer close to the neck; it "serves as a bandage to interrupt the descent of the blood. I "put the porringer into my assistant's hands, with pretence to "make dressing to lay upon the vein, but stood at a little dis-"tance, looking my patient in his face, with a resolution to "bleed him, until I saw his countenance change; which I did, "and then stept to the patient to stop the vein. The while "the porringer was taken away, the blood ran out of it on one "side, it having been melted, and the hole so covered by sol-"der that I did not see it before. During the while he was "bleeding, I thought him long, and wondered to see so little "blood in that porringer from so full a stream; but seeing the "bed so bloody, it was evident, that when the melted hole

view of saving the eye, it must be distinctly kept in mind, is during the first stage and the early part of the second; and when, either by inspection of the eye, or the symptoms of the patient, we find that ulceration of the cornea has commenced, it is then to be treated on the principles already detailed for subduing sclerotic inflammation.

The operation of continued nausea and vomiting has beenrecommended as a substitute for this efficacious employment of the lancet. It can scarcely be supposed that so obvious a method of diminishing inflammatory action was overlooked in the treatment of this disease. With regard to its effects, I have to observe, that among adults of the robust frame and inflammatory diathesis of soldiers, it it will not prevent the worst symptoms of the disease from coming on, and that to them it is a much more disagreeable practice, and in the end a more debilitating treatment than the one which I have been recommending, and which enabled

" pressed not against his neck, the blood ran into the bed, " which deceived me; but the patient, upon taking a little cor- " dial julep, refreshed his spirits. I sat a while by him, and " left him pretty hearty. The next day I returned sooner than " I used to do, being doubtful how I should find him; but to " my wonder, he was perfectly well in his senses, and dis- " coursed soberly of what passages he remembered in the time " of his delirium." Book V. Observ. x.

me to combat the disease with success, when it threatened an extensive destruction to the British army. The medicine which I generally employed, for the purpose of exciting and maintaining nausea, was the infusion of tobacco given in doses, according to the age and strength of the patient. As some consequence has been attached to a recent proposal of this practice, in selecting a case to illustrate the treatment of the Egyptian ophthalmia, I have given one in which it was employed, to the dates of which the attention of the reader is requested. The successful issue of the practice applied to children is no proof of its being adapted to adults, or that it is either proper or necessary to adopt so harsh a practice with subjects at an early period of life, in whom, as in women, the disease never assumes that degree of violence which it does with men.

Of three thousand cases admitted into the Ophthalmia Depot, I am not aware of any one in which the practice of depletion, assisted by the remedies mentioned, did not prove effectual when the patient was received under the first attack of the disease. An unfortunate feature of this very dreadful complaint is, however, its great tendency to recur, even after the eye itself has recovered its healthy and natural appearance; and, although it be in our power to conquer its present

violence, no treatment can prevent relapses from taking place. As long as the lining of the palpebræ continues villous, this accident is liable to occur, with all the severity of the original attacks. In every succeeding relapse, the danger of vision being impaired becomes greater; and in cases where the vessels of the cornea have been weakened, and its structure softened by previous inflammation, its destruction takes place with a rapidity which it is exceedingly difficult for any treatment to prevent.

I may state the loss of men to the service out of the total number admitted at the Ophthalmia Hospital at twenty-five, all of them being cases of relapse or of infection after their admission, which the crowded state of the hospital rendered very liable to happen; and in most of them the cornea had been rendered opaque by previous inflammation. But when there is an opportunity of treating the disease on its first appearance, even this proportion of loss, though small, I openly aver ought never to occur. The Ophthalmia Hospital received such cases as had been previously treated at other stations, and of that treatment I could not always speak with approbation.

As some account will naturally be expected of the result of the practice on the general health and constitution of the patient, I shall succinctly state my experience on so important a subject. The sudden loss of any large quantity

of blood produces, in general, a çonsiderable frequency of pulse, and if blood-letting be largely repeated within a short space of time, this is accompanied by heat of skin, thirst, restlessness, and whiteness of tongue. The pulse is soft, and the most remarkable circumstance attending it, is the great acceleration which it undergoes on any exertion of the muscles, such as rising in bed or from the sitting to the erect posture; and its frequency is also much increased while the patient continues standing. These are the symptoms which occasionally follow large and repeated blood-letting in a sound, healthy, and vigorous constitution. They very speedily subside of themselves, and may be relieved if necessary by antimonials; and whenever it was tried, the cold affusion answered the purpose of rendering the patient comfortable. With the exception of these symptoms of ephemeral fever, and the temporary debility which must of course follow the loss of blood and a spare diet, I never could trace any constitutional disease, weakness, or derangement to be connected with the treatment.* There are two descriptions of habit and temperament in which the system is longer in recovering from large blood-letting than in the others, and these do not occur often in military practice; the first is that of corpulency, and the other where the

* Vide Appendix.

powers of the mind have been more developed than those of the body, and attended with irritability of both. Men of a spare thin muscular frame universally lost a greater quantity of blood, without exhibiting any alteration of countenance or disposition to syncope.

Fat people, or those who have a tendency to the formation of fat, faint by the loss of a small quantity of blood. Although such people may be liable to disease, arising from the obstructed passage of the blood in particular parts or organs, I believe there are none in whom the existence of real plethora is more rare. The deposition of fat withdraws something from the quantity of blood made by the system, while, by enlarging the surface of the body, a greater quantity of that fluid is required to maintain the vigorous action of the extreme vessels. The aphorism of Celsus on this head was never, perhaps, more fully confirmed since the time he wrote. "Interest "etiam inter valens corpus et obesum; inter "tenue et infirmum; tenuoribus magis sanguis, "plenioribus magis caro abundat. Facilius "itaque illi detractionem ejusmodi sustinent, "celeriusque ea, si nimium est pinguis, affligitur. "Ideoque vis corporis melius ex venis, quam ex "ipsa specie æstimatur."

Three cases of ophthalmia were admitted combined with ague, in which nothing but the ab-

solute necessity of saving the eyes induced me to use the lancet, and I was agreeably surprized to find that in none of them did the ague return after the operation.

In cases where the patient is capable of losing a very large quantity of blood, as soon as the countenance is observed to change, in the full assurance that a state of deliquium will succeed, the arm may be bound up. I found experience of great use in informing me whether this event would take place or not, saving by this means the necessity of suffering the blood to flow until syncope actually came on; but the unexperienced must be cautious, and not trust to this issue, for if it does not succeed, and the orifice be to be again opened, the system having had time to rally, more blood will be abstracted than if no interruption had taken place. The erect posture is well known to be favourable to the success of the operation, in inducing syncope. Opening a vein in both arms is also recommended, but so harsh a practice need seldom be employed. The fear of the operation, it is well known, will often occasion both nausea and syncope, but I never found that the latter produced in this way was to be relied upon as a substitute for the further evacuation of blood.

It was observed, that at a second blood-letting, though repeated in a short time after the first,

the quantity necessary to produce syncope was generally larger than was lost by the first operation. Before the principle on which the success of this remedy chiefly depends was properly understood, when large blood-lettings were more frequently repeated, and when, on the whole, much more blood was abstracted than by the practice I recommend, the sensible change produced on the appearance of the blood itself, was a diminution of the relative quantity of crassamentum to the serum, and of the specific gravity of the mass. The serum seemed also to hold a greater quantity either of gelatine, or albumen in solution, as it sometimes became white and turbid. The average quantity of blood abstracted before the approach of syncope appeared to be from twenty-four to thirty-four ounces.

An increased secretion of the aqueous humour is liable to occur in every form of inflammation, either of the conjunctiva or sclerotic coat. The consequent distension of the eye necessarily augments the violence of the disease, and renders the progress of ulceration, of the cornea, more rapid in its course. The symptoms which indicate the danger of rupture do not occur till excessive tumefaction or œdema of the palpebræ has either in part or entirely excluded access to the cornea. When the aqueous humour can be evacuated, it gives a respite to the present

violence, but does not remove the probability of its return. Besides, as it does not abate the external inflammation so soon as the incision unites, which happens in a very short space of time, the operation is again indicated as strongly as before.

The relief afforded by venesection is different, for it lowers the inflammation on which the distension of the cornea depends. The operation of puncturing the cornea is therefore only called for in those cases where syncope has not been or cannot be induced, and when pain indicates that distension is going on; and in general it can only be performed in cases where venesection, failing in producing syncope, and consequently in giving a decided check to the disease, has, nevertheless, so far mitigated the external tumefaction, as to enable the cornea to be brought into view. Then, as an auxiliary, the puncture of the cornea is not to be neglected, and by repeating the operation, as circumstances arise to render it advisable, with local bleeding and local applications, the eye may be got through the disease. Whenever the operation has been often repeated upon the same eye, a partial adhesion of the iris is generally the consequence.

The late Mr. Ware recommended a grooved needle for this purpose, as well as for evacuating the matter of hypopion. In the first place, however, I must observe, that matter does not form be-

hind the cornea in purulent ophthalmia; it is only when combined with sclerotic inflammation that this event can ever occur. In the second place, when matter collects in the anterior chamber, proceeding from an ulcer of the cornea, which does sometimes though rarely happen, constituting hypopion, such collection is of no consequence whatever with respect to the treatment to be pursued. When the ulcer from which the matter is derived is made to heal, and either ceases to secrete matter, or when the matter secreted no longer finds its way into the anterior chamber by the commencement of the healing process, the portion already there is absorbed with a rapidity much greater than what takes in any other part equally subject to demonstration. An hypopion occupying the whole lower half of the cornea, I have seen absorbed in twenty-four hours after the ulcer had commenced healing. Purulent ulceration of the cornea is itself a very rare occurrence, as I have already had occasion to state.

Important as the symptoms of this malady undoubtedly are to the individual who has had the misfortune to contract it, the convalescent stage of the disorder, which we are now to consider is one of still greater moment to society at large.

If I experience any recompense in reflection for the trouble I have taken with the disease, it arises less from the success attending the treatment of

the individual cases that have been committed to my care, however numerous, than from the conviction I feel of having, by an early attention to this last feature of the disease, prevented its multiplication to an incalculable extent. The means which I took to impress the importance of this circumstance on others were less successful than they ought to have been, and it was long a subject overlooked nearly by all, excepting those, who were made to perceive its importance by personal demonstration. In regimental practice the disease was* seldom suspected to exist, unless the eye itself was either as red as the patient's coat, or overflowing with matter. Figure 1, plate III, is taken from a drawing made in 1809, to impress the importance of this stage of the disease more effectually on the minds of others. The inferior eyelid is there represented drawn down, as in the act of its being inspected, and its whole internal surface being red and villous, presents a very different appearance from the healthy state of the same parts, which should be of a pale ash colour. As long as this appearance of the lower eyelids exists, the upper will be found in a similar state,

* I speak entirely of time past, as, through the measures of Sir James M'Grigor, this and every thing that relates to the diseases of the eye, are no where better understood or more successfully treated than by army surgeons.

or still farther from recovery, owing to a thickening having taken place at the outer angle.

While the membrane is in this state, it is liable to a return of the most violent form of ophthalmia, by exposure to cold or any exciting cause, and if convalescents in this state are allowed to mix with healthy subjects, the disease will be kept up in perpetuity. Since the first establishment of the Ophthalmia Hospital, let the period of convalescence be what it would, I have invariably adhered to the rule I laid down of discharging no man until the eyelid was as completely recovered as the eyes; and had the same rule been enforced in every other quarter, the disease would have had a narrower range than it was allowed to obtain. I have had more difficulty in establishing this criterion of health to the senses and judgment of others, excepting those acting immediately with me, than can be easily supposed.*

* I content myself with stating, that this early and uniform attention to the complete recovery of the cases admitted to the hospital under my directions, can be proved by substantial and consecutive evidence from 1806 till 1812, and it was not till 1813, and after I had circulated a printed account of the disease, when the discovery of the vast importance of this stage was announced by the Secretary at War as worthy of his patronage and public renumeration. The two other discoveries by the same individual oculist, consist in the unsuccessful treatment of opaque cornea by excision in preference to escharotic agents, and the substitution of emetics for the efficient use of the lancet.

Eversion of the Eyelids, or Ectropion.—That eversion of the eyelid which follows a severe attack of Egyptian ophthalmia, in which the disease has been allowed to expend itself in action, or when it has been improperly treated by emollient applications, requires a separate consideration. It is attended with great tumefaction and a granulated state of the protruded part of the surface, as is represented in fig. 4, plate I. This affection if improperly treated is a very tedious and formidable disease.

In the account of ophthalmia which I published in 1807, I pointed out the proper method of quickly relieving this deformity, but I had not the satisfaction of seeing that it had been attended to in such cases as have passed from the treatment of others to the Ophthalmia Hospital. The cruel and useless excision of the surface has generally been the practice in the attempts made to accomplish the cure, or else escharotics have been applied with the view of destroying the protruded parts. The impropriety of these modes of treatment must appear as manifest on considering the state of the parts, as their inefficacy has been proved to those who have employed them. If the tumour or swelling of the everted part was, as the appearance of its surface may have led many to suppose, a substance entirely of vascular growth or formation, its immediate removal might natu-

rally enough be resorted to, but the case is one of a different description. When the external œdema of the eyelids begins to subside, the granulated state of the palebræ loses that counterpoise which the swelling afforded to it, and the action of the orbicularis muscles now forces it outwards. If the protrusion is not immediately returned, the upper part of the eyelid and the retroverted cartilage have the effects of a ligature to the parts protruded, and as the swelling increases, the stricture becomes still stronger by the natural but ineffectual efforts of the muscle to bring the tarsus into its proper position. The tumour of the part is therefore occasioned by strangulation, and the hypersarcosis belongs to the surface only. When the surface is thus kept in contact with the air, the granulations become larger, harder, and more sulcated. In this state the surface may be paired off for weeks or months, without any other effect than a temporary relief, by unloading the vessels, while the pain of the operation occasions great straining to the eyelids, and consequent increase of the strangulation, which forms the basis of the disease; while the operation itself is liable to produce a diseased state of the surface, much more difficult to heal than the natural state of the granulations. Although it is of the utmost consequence to remove the disease as speedily as possible, in order to save the cornea, as far as we can, from the

effects of the preceding ophthalmia; yet I conceive it is better for the patient to leave nature to herself, than interrupt her progress by the treatment I have mentioned; the proper method of curing the disease is simple, and the effect immediate.

I take the opportunity, which this exposed state of the fluid surface of the palpebræ presents, of beginning the cure of the granulations and the general villosity, by a very light and careful application of argentum nitratum. The everted portion is then to be returned, and secured in its place with a compress and straps of plaster or bandage. Every time the eye is cleaned, the same things are to be repeated; in the course of a few days the tendency to protrude will disappear, and at the end of a fortnight the patient will have so far recovered the use of the muscles of the part, as to be able by their means, alone to raise or open the eyelids at pleasure; whereas if attention is not given to relieve the strangulation which takes place every time the membrane protrudes, it becomes a disease of many months' duration, and the eye may be destroyed in consequence, although it might have escaped the violence of the acute stage of the preceding ophthalmia. So tedious indeed is its removal if left to nature, or to improper treatment, that I have seen it continue even after the voyage from

Egypt, where it had first occurred. As the affection can only occur where the acute stage of the disease has not been properly subdued, the consequences of which may be still going on to the destruction of the cornea, local bloodletting by cupping the temples, with other means of reducing inflammation of the sclerotic coat, should not be neglected. Eversion of the lower eyelids occurs chiefly by the extreme relaxation of the part, the tumefaction is seldom so great, and it is therefore only necessary to support the part by gentle pressure, and to restore the healthy action of its surface, by the slight, but daily application of lunar caustic. Plate III, fig. 2, exhibits a case in which by this treatment, the palpebræ recovered its natural position within the first fortnight after admission.

Case of Purulent Ophthalmia; admitted into the Ophthalmia Depôt, February 24th, 1808.

Feb. 25th—Corporal M'Kiver, 78 Regt. æt. 31, says he has been affected with Ophthalmia eleven days, during which period, six blisters have been applied to his face and temples, without affording any relief. The conjunctiva of both eyes is extremely swollen, and vascular, giving the cornea a depressed appearance. Considerable purulent discharge has taken place from both eyes, attended with severe pain.

Ft. venæsect: ad deliq: animi
et instil^r: oculas aq: lytharg: acetat: M: et V.
Fever diet.

26th.—Complains still of pain in both eyes, palpebræ swollen, and painful. Syncope not induced by the V. S.

Applic^r. vesicat: nuchæ.

27th.—The pain continuing in both eyes, last night a vein was opened in each arm, and from forty to fifty ounces of blood abstracted. *Syncope was not produced,* but the pain was completely removed, and he could open his eyes, and discover objects more distinctly; it again returned about twelve o'clock, and has continued ever since, situated in the upper part of the orbits. Purulent discharge much diminished.

Repetr. venæsect ad deliq : animi
applicet^r liquor acetatis plumbi
palpebris externis
hora decubitu.

28th—Has passed a restless night; severe pain of temples and top of his head; swelling of eyes somewhat diminished; little blood was obtained by venesection.

Capt. infus: nicotian: ʒi ad
naus: excitand.

29th.—Pain removed from his head, but continues in his temples. P. 70.

Repr. infus: nicotian: ut heri.

March 1st.—Nausea was excited by the nicotiana, when the pain subsided, and did not return until this morning, since which, it has been chiefly in his right eye. P. 70.

Repetr. infus: nicotian:
adhibeat^r. cucurb: cruent: temp: dextr.

2nd.—Has been much easier since the cupping.

Repr. infus: nicotian:

3rd.—Continues quite easy, swelling of palpebræ chiefly internal, with some tendency to protrude when they are separated.

Reptr. aqua: lytharg: acetat:

Fever diet, with eight ounces of bread.

4th.—Complains of soreness on the external parts of both eyes; the swelling continues as yesterday,

Omittat[r]. usus externus liquoris plumbi
acetatis sed perstet instillare eundem
inter palpebras et
adhibeantur[r]. vesicatoria pone
aures.

6th.—Swelling of the palpebræ has subsided, so as to permit examination; some chemosis still continues; small ulcer with procidentia iridis on the right cornea.

7th.—Complains only of external soreness of his eyes, which continue as yesterday.

Utere solutione litharg: acetat: pro collyrio.

8th.—Has no pain, but there is more lachrymal discharge, which feels hot, and the light is offensive.

9th.—Light continues hurtful; the aqueous humour was evacuated from the left eye this morning to alleviate pain, and an attempt made which failed upon the right eye, the iris of which is more convex and nearly in contact with the cornea, with a slight procidentia at one part.

10th.—Is able to bear a strong light with little uneasiness.

12th.—Had some pain in both eyes yesterday, the aqueous humour was again evacuated from the left, and a drop of belladona* applied to the

* A filtered solution of the extract in proportion of ʒiss to f.℥vi of water, I have found the most convenient form of applying this agent.

right. The pain was not present when the puncture was made, nor has he since had any return; the pain of the right eye was relieved by the belladona. He thinks that the sight of both is much weaker.

Applicetur vesicat: nuchæ.

March 13th.—Is free from pain, but thinks that his eyes are weaker since the application of the blister.

Capt. cinchon: ʒi quater in dies.

14th.—Eyes continue to improve.

Continuatr. cinchon: Half diet.

15th.—As yesterday.

Continuatr. cinchon:

18th.—Feels his eyes much weaker.

Omittr. cinchon:

Instilletr. aq: camphor: comp.

19th.—Eyes look better, palpebral linings still villous.

20th.—The left eye particularly improves.

23d.—Says he sees a little better with the right eye.

Continuatr. aq: camph: et

Capiatr. cinchon: ʒi ter vel quater in dies.

26th.—Eyes continue to improve.

Continr. medicam[a] ut heri.

April 22d.—Vision of the left eye is unimpaired; pupil of the right continues a little distorted from adhesion of iris; but can see objects distinctly both near and distant.

The battalion to which this man belonged, was then in barracks at Canterbury, and had but just returned from Egypt after the second expedition, and the disease having continued to present itself,* he received it from his comrade, and with many others was sent to the Ophthalmia Hospital. The subject of this case was a robust, thin, muscular Highlander, exactly the description of constitution where the greatest loss of blood can be suffered without producing syncope; the quantity abstracted was nevertheless sufficient to lessen the swelling and purulency, and thereby secure the cornea from the destruction which would otherwise have taken place. To compensate for the failure of the V. S., the infus: nicotian: was employed to excite nausea, and evidently with some benefit. Some parts of the treatment are not detailed, being matter of course. The blisters applied to the nape of the neck on the 12th March did not appear to have had the desired effect of lessening the lachrymation and scalding complained of, which it generally does when applied to the neck or back part of the head.

* A very considerable time after this, I had an opportunity of inspecting the eyes of all the men of this battalion; and from the appearance of the palpebral linings, I had no hesitation in pronouncing that a very great proportion of the men were not free from the disease, and in consequence of my report, the battalion was immediately removed to a situation remote from any other corps.

Case of Purulent Ophthalmia combined with Ague.

April 21st 1810.—Corporal Granden, 11th regiment, æt. 24, has been affected with acute inflammation of the conjunctiva six weeks, which first made its appearance when at Chelmsford. The palpebræ are much swoln, with chemosis; cornea cannot be seen; purulent discharge, and considerable pain. Has not been bled, particularly on account of ague with which he has been affected.

Mittatur sanguis ad deliquium
Laventur occuli sæpè aq: tepida
Instilletur. aq: lytharg: acet: bis in die
et appr. infus: tabaci linteo nocte.

23d.—Is free from pain; swelling and chemosis still very great; the left cornea appears ulcerated.

Contr. medica.

Hora tertia, P. M.—Now affected by violent pain in the globe of the right eye; says it feels as if it would burst.

Iterum mittatur sanguis ad deliquium
et capt. haust: purg: eras mane.

24th.—Was relieved by the bleeding; tumefaction unabated; adnata and palpebræ of a paler colour.

Contr. aq: lytharg: acet:
et infus: nicotian
applicr. empl: lyttæ pone aures.

29th.—Previous to the detraction of blood, he had two regular paroxysms of ague, but has had

no return of it since. Eyes improve; purulency nearly gone.

Instillet. solut: opii.

May 1st.—Opens his eyes more freely; trifling purulency; general health good.

8th.—Eyes have been convalescent: to-day he complains of heat in the right, in which there is a return of chemosis.

Repetatur. venæsect: ad deliquium.

11th.—Eyes have been free from pain since the venesection; chemosis considerably abated.

Instilletr. tinct: opii
et contr. infus: tabaci.

12th.—Eyes improve; has had no return of ague.

June 16th.—Vision, though still confused, is more distinct than at last report; tumefaction of the palpebræ nearly gone: lacrymation trifling; eyes have improved but slowly during the last week: has derived more benefit from the tincture than from the solution of opium.

Contr. tinct: opii
omittr. infus: tabaci.

25th.—Eyes much improved.

July 16th.—Continues to improve.

Contr. tinct: opii
adhibeatr. sulph: cupri ad palpebras internas more solito.

CHAP. IV.

GONORRHŒAL OPHTHALMIA.

The occurrence of inflammation of the eye, duringa n attack of gonorrhœa is so frequent as to have occasioned a diversity of opinion, as to the nature of the connexion subsisting between the two affections. By some, it has been supposed to take place in consequence of a specific sympathy between the conjunctiva and the urethra; by others, that both diseases are effects of the application of the same specific virus. The first of these opinions includes the supposition of actual metastasis of the inflammation, from the one part to the other; this, however, I believe, is seldom met with but in books. That gonorrhœal virus, applied to the eye of an healthy individual, will excite a highly purulent ophthalmia, there cannot be a doubt, and has been proved within my own knowledge to be true. But it is evident that an infection of the conjunctiva, as well as of the urethra, from a source foreign to the person so infected, can take place but very seldom;

while the co-existence of the two diseases is an every-day occurrence. Those who have seen a person attacked by both diseases, not finding that the disease of the urethra was suspended, (although authors talk of it as a matter of course), have individually concluded, that the disease of the eye has been produced by the patient inadvertently conveying the gonorrhœal discharge from his urethra to his eyes. This, however, will not account for inflammation more frequently attacking the sclerotic coat under a rheumatic form, than it does the conjunctiva under a purulent one. I have already stated gonorrhœa to be a frequent exciting or predisposing cause of rheumatic inflammation of the sclerotic coat; I shall here endeavour to come at an explanation of the case, as well as that of the more analogous affection of the conjunctiva.

The communication of diseased action from one part to another has been observed by Mr. Hunter, the parent of experimental pathology, to be one of the least explicable of the phenomena of disease. To a certain extent, diseases, more especially those of diathesis, have a disposition to limit their attacks to the same kinds of structure; but we also know, that the most regular are apt to deviate from this regularity, as gout and rheumatism. The latter of these being the most analogous to the one we are about to examine,

it may be necessary to observe, that it is used to signify two very different affections, which seldom occur in the same individual.

Between acute rheumatism, as it has been called, or that painful inflammation which seizes on the articulations, and has its principal seat in the synovial membranes, and that painful affection of the muscles called chronic rheumatism, there are no other points of resemblance, than that they both originate from the action of cold, or cold and moisture. Both are remarkable for the suddenness with which they shift from one part to another, and both tend to diminish locomotive power; the one by affecting the joints, the other by diminishing the power of the muscles by which the joints are moved. They are not only distinguished by this difference of scite, but are different in all their relations; the one is liable to produce permanent thickening, or enlargement of the seat of its attack; the other is followed by a wasting of the part affected. Each of these two diseases, though confined, and that often through the whole course of a long life to its respective structure, occasionally attacks the organs essential to life itself. It is, however, seldom that those who are martyrs to what is called chronic rheumatism, that is, a disease partly inflammatory,

and partly spasmodic, attacking the muscles, the fasciæ, and tendons, to suffer from the rheumatic inflammation of the large joints, described under the name of acute rheumatism. Yet each of these complaints, and especially the acute inflammation of the joints, presents us with the most frequent instances of the sudden translation of the local disease from one part to another, without the one disease ever reciprocating with the other. Acute rheumatism goes suddenly from one joint to another, and often returns again to the one first affected; but still it is a disease of the joints.

The familiarity which I early contracted with the symptoms of purulent ophthalmia, as introduced by the army from Egypt, or of more doubtful origin, made me sensible of the deviation of any case from the regular and characteristic appearance of that complaint. My attention was occasionally excited to cases, which, although of a strongly marked purulent inflammation, yet differed essentially, both in symptoms and termination, from the disease which I was so extensively engaged in treating. Being able, in some of them, to discover either the actual presence, or the recent existence of gonorrhœa, I satisfied myself for some time with the common belief that this disease was the effect of the matter conveyed from the urethra to the eye.

In the case of a soldier, received in a very advanced state of the Egyptian Ophthalmia, in whom destruction of the cornea had to a certain extent taken place, I took occasion to represent the possibility of diverting the disease from the eyes to the urethra, by applying the discharge to the latter surface, and he requested that this experiment, or any other, might be tried, which had the slightest chance of relieving the torture he endured, or of saving his sight; and accordingly some of the matter taken from the eyes was freely applied to the orifice of the urethra by one of my assistants. No effect following this trial, in order to establish many important facts, it was repeated in some others, all labouring under the most virulent state of the Egyptian disease; and in all, the application was perfectly innocuous. But, in another case, where the matter was taken from the eye of one man, labouring under purulent ophthalmia, and applied to the urethra of another, the purulent inflammation commenced in thirty-six hours afterwards, and became, with the addition of more tumefaction of the glans penis than usually occurs in violent gonorrhœa, a very severe attack of that disease.

From the result of these cases, I could no longer admit the possibility of infection being conveyed to the eyes from the gonorrhœal discharge of the same person. Some time after this, the improbability, or rather impossibility of this

effect, was rendered decisive by an Hospital assistant, who, with more faith than prudence, conveyed the matter of a gonorrhœa to his eyes without any affection of the conjunctiva being the consequence. From this time, I was led to look for an explanation of the connexion subsisting between gonorrhœa and ophthalmia, arising in the same person, in some peculiarity of the constitution, and to conclude, that the disease is an extension of an inflammation, which first shewed itself in the urethra, and of which the different structures of the eye are liable to participate, in common with many other parts.

Major ——, ætatis 25, — contracted gonorrhœa in July 1809. In about a fortnight after the appearance of the disease, he was seized with the usual symptoms of hernia humoralis. As these abated, pain and swelling commenced in the right knee, and being at this time under the necessity of travelling in an open carriage for a couple of days, at the end of the journey the pain and swelling had extended to the other knee, to the foot and toes, especially the articulation of the great toe. Suffering under excruciating pain, and wholly deprived of the use of his limbs, he came under the care of Sir Henry Halford: but no treatment seemed to possess any power in removing the complaint; and, in addition,

his right eye was suddenly attacked by a very violent inflammation, which threatened destruction to the organ. Having given up the use of medicine, he went to the country for the restoration of his health, and after being there three weeks, the gonorrhœa again increased in the urethra without any abatement of the other symptoms. The swelling and stiffness of the joints, rendered him still scarcely able to crawl without assistance. The use of the warm bath and a residence by the sea was recommended. He experienced, however, little apparent benefit from the former, but after a very tedious convalescence of two years, he found himself able to join his regiment in Spain. From this time he recovered the wonted use of his limbs, and experienced no return of his complaint, though exposed to all the hardships of the campaign of 1812, memorable for the victory at Salamanca, and the retreat from Burgos. After exposure to a current of air in a state of perspiration, he was seized with an intermittent fever, and obliged to return to England, and at this time he had some increase of the stiffness of his joints. He continued to suffer from ague, and an impaired state of health, for nearly twelve months, when he returned to the active duties of his profession, and for some time enjoyed a perfect state of health, and the free use of all his joints, till De-

cember 1814, when he again contracted gonorrhœa, with symptoms of unusual violence. In a fortnight the discharge began to abate, and violent pain with swelling attacked the large toe, and metatarsal ligaments of the toes of the right foot. The disease then proceeded to attack the knees, with the same violence of pain and swelling as on the former occasion. As the violence of the symptoms began to abate in the knees, the left eye was attacked by violent ophthalmia, and excited great alarm for its safety.

I saw him in his convalescence from both these severe attacks of gonorrhœal inflammation. The last inflammation of the eye appeared to have had its seat in the sclerotic coat, and on examining it more closely I found an irregular and contracted pupil, with some opacity of the capsule of the lens, and adhesion between it and the iris; and on causing him to shut the sound eye, the vision of the left was found very much impaired. Under the use of belladona, and the corrosive muriate of mercury, the eye has recovered beyond what I encouraged him to expect.

Great thickening of the synovial membrane of the knee joints still remains, and he is incapable of standing or walking.* On the first attack, the right eye became the seat of the ophthalmia, on the second the left; in neither was there any symptom of

* 1816.

purulency or chemosis, to indicate disease of the conjunctiva. It ought to be observed, that the urethra is still subject to returns of gonorrhœal discharge.

It is a singular coincidence, that the brother of the above patient has been under my care for the treatment of opaque cornea, which came on in consequence of an attack of purulent ophthalmia of the right eye, the treatment of which was mismanaged; and was ascribed by his medical attendants to a syphilitic taint, for which there was no other ground than an idea that such a form of disease could be owing to no other cause. As this patient was subject to muscular rheumatism, which, previously to the attack, had shifted to his head, I have no hesitation in ascribing the ophthalmia to a translation of the rheumatic inflammation to the tunica conjunctiva.

In the former case two important features present themselves; the first is, that the disease in the urethra was neither suppressed nor modified by this attack of inflammation of the eye; the second, that the last inflammation of the eye was decidedly a case of rheumatic inflammation of the sclerotic coat, and not of purulent ophthalmia; and this last is an event of more frequent occurrence, though more liable to be overlooked in its connexion with the gonorrhœa, than purulent inflammation of the conjunctiva.

Although the inflammation may attack the sclerotica without the conjunctiva, it is seldom, I believe, that the gonorrhœal action is translated to that membrane without attacking the sclerotic coat also, and it is this combination which renders it different both from Egyptian ophthalmia, and from gonorrhœal ophthalmia produced by inoculation. In some respects it may be said to exhibit less violent symptoms than either of these diseaes, but is a more rapidly or perhaps the most disorganizing form of any inflammation that attacks the eyes. It does not yield to the same treatment; we have often neither the time nor the means of preventing the destruction of the cornea. In its external appearance it differs chiefly from that produced by ophthalmic virus, in the œdema being chiefly confined to the conjunctiva where attached to the eye, producing that state which we call chemosis, so that the eye itself is seldom concealed from observation, as is most generally the case in the unmitigated state of the other. The discharge is less copious, of a more viscid consistence, and of a deeper yellow colour; but with these more favourable symptoms there is often more intolerance of light, a greater tendency in the disease to attack the internal parts of the eye, as well as the rapid destruction of the substance of the cornea by slough or ulceration.

Instead, however, of considering even this purulent inflammation of the conjunctiva as a proof of metastasis, in the strict sense of the word, of the disease from the urethra, I am doubtful even if this last be not a similar manifestation of a peculiar rheumatic affection, produced by over exertion of the seminal and muscular systems, especially if followed by exposure to cold. As a disease, it seems to unite the two forms of rheumatism already noticed, and is of all the species of that complaint the most untractable, whether regarded in its local symptoms or in the protracted hold which it maintains over the constitution of the patient. I have now seen six cases of the disease, in each of which there has been a return of the complaint after sexual intercourse, and when nothing but this circumstance could warrant the supposition of the patient having received a fresh infection. In all these cases, any aggravation in the inflammation of the other parts has never been accompanied by any suspension of the gonorrhœa; on the contrary, the discharge generally increased.

A patient now under my care for the second attack of this complaint, to whom I have suggested my doubts of his ever having contracted a venereal infection, has expressed his conviction to be the same: it is worth remarking, that on observing to this patient that I had never seen a similar case

without some affection of the eye occurring along with it, he immediately said that from the time of his first attack he never had seen objects so distinctly as before, and I found, on examining his eyes, that the capsule of the lens had become opaque in both. A well marked case and one of great suffering occurred in the person of a professional friend, who, in a few days after his first attack of gonorrhœa, was seized with very violent purulent inflammation of both eyes, which, until I saw him, he had attributed to the accidental conveyance of the matter from the urethra. He has since had another attack.

The disease I think may be said to be one of gonorrhœal inflammation, and to denote its general nature we may give it the specific term of gonorrhœal rheumatism; it may be defined as a rare combination of both forms of that complaint, characterized by the loss of muscular substance, and thickening of the synovial membranes, a frequency of pulse, the other functions being very little disturbed.

To return to the form under which it attacks the eye: having already treated of rheumatic inflammation of the sclerotic coat, I shall now make some observations on the purulent inflammation assumed by the conjunctiva, of which there is the following very accurate account

in the works of Professor Scarpa, who, however, I cannot imagine, has seen the disease come on in consequence of the suspension of gonorrhœa in the manner he describes, but think that he has rather assumed it as an admitted fact; and this I conceive to be the great fault to be found with that work, the reader being often in doubt whether the author speaks from observation or opinion.

In stating the result of my own experience, I have preserved my self free from any bias which such high authority might create. Having the misfortune to differ on many subjects from Professor Scarpa, I am the more willing to quote his description of gonorrhœal ophthalmia, which the reader will perceive to be in perfect unison with the sketch I have now given.

" On the sudden suppression of gonorrhœa, " which usually takes place in consequence of " violent exertions of the whole body, the abuse " of spirituous liquors, long exposure of the " whole body to an excessive degree of cold, and " of acrid and astringent injections thrown into " the urethra; or other similar causes, the ophthal- " mia appears with *great tumefaction of the con-* " *junctiva rather than of the eyelids;* not long " after, a copious and continual discharge of " greenish yellow matter issues from the eyes, si-

"milar to that of the virulent gonorrhœa; the
"disease is attended with great feverishness, rest-
"lessness, a burning heat and acute pain in the
"eyes, and head, and an intolerance of light; and,
"in some cases also, *an incipient hypopion ap-*
"*pears shortly afterwards* in the anterior chamber
"of the aqueous humour. In the second case,
"the same effects are produced when the patient
"incautiously inserts the virus by rubbing his
"eyes with his fingers, or a cloth imbued with
"the matter of gonorrhœa; with this difference,
"however, that the symptoms before enume-
"rated are not so violent, nor the inflammation
"so excessive in this instance as the former."

If the conjunctiva have been previously affected by purulent ophthalmia, although the consequence of another cause, it seems to acquire, in the words of Hunter, a much greater disposition to accept the gonorrhœal action from the urethra. Convalescents from the Egyptian ophthalmia are extremely liable to suffer a return of swelling and purulency in the conjunctiva, if they are so unfortunate as to contract a gonorrhœa; and when in consequence of the former disease the structure of the cornea has been softened, the new action destroys it with astonishing rapidity. The unusual tendency to relapse, which constitutes one of the most distressing features of Egyptian ophthalmia, prevented this circumstance from attract-

ing my observation so early as perhaps it otherwise would have done; but from the recollection of the circumstance attending some of the different cases of relapses, in which all my efforts proved unavailing to save the cornea from sloughing, I have no doubt, that, had the inquiry been made, a connection between the relapse and the recent infection of gonorrhœa would have been made out. The only case that has occurred in the whole course of my practice in which delirium and phrenitic symptoms have been in any way combined with ophthalmia, was in the case of a soldier of the 20th regt. who first contracted the infection in Egypt, and was admitted with opaque cornea of nearly seven years' standing. He had recovered his vision, and was so far well as to be employed as an orderly. He was seized with what was at first conceived to be a relapse of his original disease, after lying a whole night in the fields in a state of intoxication; but as upon enquiry he was found at the time to have laboured under gonorrhœa, there can be no doubt but that the violent inflammation which attacked his eyes, much weakened by previous ophthalmia, was connected with the gonorrhœal action; and which afterwards seems to have attacked the brain or its membranes; and I have never seen, in any one case of the many thousands I have witnessed, any thing to indicate the least sympathy between

the membranes of the brain and the Egyptian ophthalmia.

I have now considered gonorrhœal ophthalmia, as arising only from a communication of a more general diseased action, but it occurs also from the contact of the matter of gonorrhœa, when it is applied to the eyes of another person. In this case a very violent disease is the consequence; and although there is less proportional œdema of the palpebræ than in the Egyptian ophthalmia, the inflammation like that last affection, is more strictly confined to the conjunctiva, and the cornea is less liable to sudden destruction.*

The treatment of gonorrhœal ophthalmia depending upon a constitutional communication of the diseased action, and on the application of the virus, will be different owing to a more immediate affection of the sclerotic coat in the

* In a case which I pointed out to my assistants, as one in which I suspected some gonorrhœal connexion, owing to the want of swelling of the palpebræ; on a strict search being made, to ascertain whether he laboured under clap, no trace could be perceived by which any connexion could be made out; but information was received of the patient's having offered a dollar to a man affected with that disease, to give him some of the discharge for the purpose of inoculation, and this, with other evidence of a wilful intent to sacrifice his eyes, was proved before a court martial. The practice of inoculating for the Egyptian disease, has, I am afraid, occurred more than once.

former, and the consequent rapidity with which ulceration takes place in the cornea. There can be no objection to the practice of older authors, of applying fomentations and pungent substances to the perinœum; but I must particularly reprobate the application of poultices or fomentations to the eye itself, recommended by most authors, as it is the most effectual way of assisting nature to destroy the cornea. General bloodletting does not possess that controul over the disease, which it does when it arises from inoculation, or the application of virus to the eye. Urged by the extreme necessity of the case, I have been led to try a very free use of cold, and from the trials I have made, I think it appears to be the best calculated to remove the disease. By the use of cold, I mean something more than the application of wet rags or compresses over the eye. The liquid applied should be cooled to a very low temperature, and renewed as soon as it ceases to be felt cold.

The affection of the joints and muscles, is of all the forms of rheumatism the most untractable. I have tried in succession diaphoretics, assisted by strict attention to diet and temperature, I have made use of various tonics and stimulants, more particularly turpentines, cantharides, and cubebs; tepid bathing, hot and vapour baths. But continued frictions along the spine, with stimulant

embrocations have proved more decidedly advantageous, than any other treatment which I have yet tried.

The treatment of ophthalmia arising from the matter of gonorrhœa applied to the conjunctiva, may be conducted with a certainty of success on the same plan which has been recommended for the cure of Egyptian ophthalmia.

CHAP. V.

ON THE PURULENT OPHTHALMIA OF INFANTS.

A PURULENT inflammation of the conjunctiva frequently takes place shortly after birth. The external appearances differ in no material circumstance from those we have already described; but in its nature it is considerably modified by the more delicate texture and greater vascularity of the parts affected, and the more intimate connexion subsisting between the vessels of the conjunctiva and those of the sclerotic coat; the inflammation, therefore, is sooner communicated to this coat also; sloughing and ulceration of the cornea, therefore, occur earlier in infants than in adults. The inflammation of the conjunctiva immediately after birth is referrible to several causes; at least, it appears probable that it is sometimes excited by one, and sometimes by another; it may be produced by the conjunctival surface coming in contact with some morbid secretion while the head is in the vagina. But besides this, there are many causes sufficient for its production; more especially the exposure of the membrane to an atmosphere vi-

tiated with human effluvia. In lying-in-hospitals, where the greatest attention is not paid to ventilation, the disease is one of very frequent occurrence; want of cleanliness in removing sordes, or the use of dirty sponges to the face and eyes; the negligent exposure of the head to cold, and perhaps soon after to the heat and light of large fires.

Chronic inflammation of the glands of the eyelids is liable in adults under the same or similar circumstances, such as damp and crowded dwellings and defective nourishment, to extend to the conjunctiva of the eye, producing there a purulent inflammation which may be called scrophulous, syphilitic, rheumatic, or arthritic, according as it may be allied to any of these affections.

In such subjects it is, therefore common, to find purulent ophthalmia combined with inflammation of the eye itself, as we have described it under the head of sclerotic ophthalmia. As it would be useless to attempt to characterize such ophthalmias from their local appearances, I shall content myself with referring for their treatment to the general principles already laid down, as far as regards the security of the eye, against the destructive effects of the disease; at the same time, that the general remedies must to a certain extent be regulated by the character of the constitutional affection. We must support relaxation

by stimulants and obviate excess of action by depletion.

In children it is seldom that the practitioner has an opportunity of seeing the disease until after the tumefaction of the palpebræ have taken place, this as in the disease of adults is soft, smooth, and elastic, and prevents the free examination of the eye.

At first the discharge is thin and whitish, afterwards it becomes thicker and yellow; it collects in considerable quantities, and when the eyelids are forced open it springs out with great force; occasionally it is mixed with blood. When the œdema ceases, the inner surface of the palpebræ becomes sarcomatous, and this diseased surface, when the eye-lids are opened, forms an exterior fleshy circle, beyond which the relaxed conjunctiva of the eye comes forward as a second; and often the caruncula lachrymalis adds still farther to the valvular appearance which the part presents.

When the eye is first examined, the matter which is collected upon the cornea, and which is retained in that situation by the chemosis which surrounds it, leads the practitioner to suppose that the cornea itself is in a state of slough or suppuration. The disease in infants seldom ceases under six weeks, and often continues from three to four months before the patient opens its eyes without assistance.

Treatment.

If we see the infant before the inflammation has extended to the conjunctiva of the eye, its farther progress may be checked by removing it to an healthy atmosphere, and carefully washing the eyes with any mild collyrium. If the second stage have come on, we are never to lose sight of the destructive consequences which may take place if the disease be allowed to remain unsubdued. The application of leeches may safely be adhered to throughout the whole course of the disease, not only for preventing the formation of slough, but for promoting the healthy action of the surface beneath. These two indications may be greatly aided by local remedies directed to the different stages of the complaint. On the first accession of the tumefaction, the best effect will often be experienced by the insertion of a small portion of ointment composed of lard, butter, or any animal fat, without wax, with a proportion of ten grains of the red nitrate of mercury to six drachms of the ointment. As the purulency advances the liquor plumbi acetatis will be found no less serviceable than in other instances of purulent ophthalmia. It will be necessary, however, to ascertain that it has been boiled sufficiently to

evaporate any free acid which might otherwise remain. To assist the separation of the slough, a solution of the argenti nitras proves highly serviceable; and the recovery of the relaxed conjunctiva may be farther aided by the use of a solution of alum, or of the sulphas cupri either dropped into the eye or injected with a syringe.

THE END.

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NOTE.—(Page 219).

As, under other circumstances, it is impossible to say, that the use or abuse of bloodletting may not be productive of injury to the constitution, I think it necessary to observe that I ascribe the uninterrupted health of those treated for the cure of Ophthalmia in a great measure to the nature of that disease rendering confinement to bed a circumstance of all others to be avoided; and, as the directions which Sydenham has given on the subject of large and repeated bloodlettings cannot be too strongly impressed on all who are called upon to exercise this practice, I quote the two following passages from the works of that eminent physician; the first as presenting a striking parallel to the practice here spoken of, in its application to the cure of a disease which, like the Ophthalmia of the British army, had resisted every other remedy, and both as shewing the good effects of keeping the surface cool after the free use of bloodletting:

"Cum inter cæteras belli civilis calamitates, quæ hanc patriam nostram miserrime adflixerunt, Pestis etiam multis in locis grassaretur; at forte in Castrum *Dunstar*, quod in provincia *Sommertonensi* situm est, aliunde invecta, aliquot præsidiariis cum macularum exflorescentia derepente exanimatis, complures etiam alios corripuisset; Chirurgus quidam, qui, à longa in regionibus exteris peregrinatione redux, tunc temporis stipendia inter alios faciebat, à præsidii Præfecto enixe rogat, ut sibi liceret commilitonibus suis, truculento morbo correptis, pro virili succurrere; quo annuente, singulis ægris

statim à primo morbi insultu, atque nullo adhuc tumore conspicuo, sanguinem ingenti copia detraxit, donec pedibus deficere inciperent, *nam stantibus ac subdio vena pertusa est*, nec aderant vascula, quæ cruoris in terram effluentis mensuram definirent. Hoc facto, eos in tuguriola sua ad decumbendum dimisit. Et quamquam à Phlebotomia nullum omnino remedium adhibuit, tamen, ex complurimis iis, quos hoc modo tractasset, mirum dictu, ne unus quidem desideratus est."--*De peste Annor.* 1665-6.

"Quando observaverim in hac Febre (uti etiam in *Pleuritide*, *Rheumatismo*, aliisque omnibus morbis Inflammatoriis, in quibus abigendis Venæsectio, & Refrigeratio, primas obtinent,) medicamenta summe Refrigerantia, & repetitam sæpissime Phlebotomiam, *ne hilum prodesse, dum interim æger lecto indesinenter adfixus*, ejus calore torreatur, æstate præsertim."—*De Febre Variolosa Annor.* 1667-68.

*** The following letters are from gentlemen who were witnesses of the practice followed at the Ophthalmia Hospital.

No. I.

Guy's Hospital, Dec. 14, 1809.

Dear Sir:

You request me to state to you the result of my experience during the time I was attached to the Ophthalmia Depôt, relative to the treatment there had recourse to for the cure of the Ophthalmia, especially with respect to its efficacy in arresting the progress of the disorder, and the degree of certainty to be attached to its operation, and also whether any injurious consequences have appeared to arise from it.

I have much pleasure in complying with your request, as it enables me to bear my feeble testimony to the efficacy of means directed to the cure of a disease which has effectually resisted every other hitherto employed for that purpose; a disease which when not checked, is attended by such calamitous effects, which has already proved such a scourge to the army, and which threatens, if active measures be not speedily adopted for its extirpation, not only to continue unceasingly, but to extend itself through the nation at large.

Before I arrived at Selsey I was aware of the nature of the treatment pursued there, which being so considerable a deviation from the common routine, and apparently likely in some cases to be productive of injurious effects

to the constitution, very naturally excited in me particular interest, and disposed me to make an active use of the opportunity afforded me of attending to every circumstance relative to it, and of judging for myself.

Diligent inquiry into the previous treatment of the patients received at the depôt, great numbers of them being quite blind, and into the means employed in the different regiments in which the disease had appeared, soon convinced me that none of them were effectual in checking the disease, and preventing it from going on to purulency and disorganization of the eye. But, by the treatment pursued at Selsey, I found that we had the disease, if taken in its first stage, completely at command, that we could effectually check it, and prevent its further progress.

The result, then, of my experience, with respect to the efficacy of this treatment in arresting the progress of the disease, is briefly this—that in the first stage (*i. e.* before purulency or disorganization has taken place) it is most complete; but, if not employed until after the purulent stage has commenced, it is only, though very powerfully, palliative.

The degree of certainty to be attached to its operation, I think so great, that I am inclined to doubt whether, in any case, the treatment, if properly pursued, would fail of success. There may, however, be cases wherein it would; and if there are, from what I have seen, I should expect to find them in strumous habits, and where there had long been slow inflammation of some part of the organ.

In every relapse, except two, which occurred at Aldwick, while I had charge of the patients there, the treatment was most completely and decidedly successful—cutting short the disease, and preventing its going on to purulency. The two cases which I have excepted were those of William Young, in whom disorganization had commenced before, through irregularity on his part. I was informed of the relapse having occurred in him; and of Corporal Morris, in whose eye the disease went on to produce purulency, disorganization, and loss of vision: but although there had been long slow inflammation in it, I am and always was convinced that the want of success in this case was solely attributable to my not repeating venesection. These two cases, however, serve to shew what would have been the result of the others, if they had not been timely and properly treated.

With respect to whether any injurious consequences have appeared to arise from it, I am happy to be enabled to say, certainly there have not: I was always on the alert to discover any thing of that kind; but I never could connect any disease which occurred, or other ill consequence, however remotely, with the treatment pursued at the depôt.

I am,

DEAR SIR,

Your's sincerely,

GEO. WOOLLEY.

Dr. VETCH,
Surgeon to the Forces,
&c. &c. &c.

No. II.

Selsey Depôt, Nov. 29, 1809.

SIR,

IN answer to your request respecting my experience in the treatment of Ophthalmia at this depôt, I beg leave to observe, that on my first arrival, when placed immediately under your direction, I confess it was with some reluctance I put into practice the severe discipline which my experience has since proved so absolutely necessary.

It is obvious that, in the violent acute stage of the disease, large bleedings are proper, carried even ad deliquium animi; and to be repeated according to the nature of the symptoms, and the violence of the disease; I find that unless such vigorous means are employed to arrest the inflammatory action, irremediable blindness is the certain consequence.

At first I conceived much might be risked, rather than by this system of depletion the strength of the patient should be reduced; but I am now convinced that nothing is to be dreaded from this practice, and I can safely assert, that out of the many hundreds who have been treated in this method, in no one instance has disease been the consequence.

In averting to local remedies, bleeding by cupping, leaches, and scarifying the inner palpebræ, as well as blisters and purges, are useful auxiliaries, but of *themselves* by no means adequate to check the violent inflammation of purulent Ophthalmia, when *men* are the subjects of its attacks.

The applications which seem most beneficial in cases of swelling and purulency, are the infusion of tobacco, applied with compusses by night, and the aqua lythargyri acetata dropped into the eye twice or three times a day; together with frequent ablutions of tepid water, which last is best effected by introducing a syringe between the swollen palpebræ, to wash away the matter secreted.

Under this treatment, viz. copious blood-letting, the application of the infusion of tobacco, and the aqua lythargyri acetata, the enormous tumefaction of the eyelids and chemosis quickly subsides; while, under less active measures, there is a continual pain, an offensive discharge of purulent matter, the cornea soon bursts, and the disease finally terminates either in staphyloma, or the aqueous humour escaping, the cornea becomes flattened and its texture destroyed.

It would be intruding on your time to enumerate the different modes of treatment necessary in other stages of the disease. In fine, from the practice I have seen, I am persuaded that very active means *only* (such as before observed) will check the rapid progress of the disease; and, I believe, that all those cases which have terminated in loss of vision might have been prevented; the history of the many cases of blindness received at this depôt fully confirm this opinion.

I have the honour to be,

SIR,

Your faithful and obedient Servant,

John Vetch, M.D. JAMES PAXTON,
&c. &c. &c. *Hospital Mate.*

EXPLANATION OF PLATES.

PLATE I.

Represents a case of purulent Ophthalmia, in which the external œdema has nearly ceased, and the tarsi are beginning to turn up, by the preponderance acquired by the fleshy state of the palpebral linings.—*Vide page* 202.

PLATE II.

Fig. 1. Represents complete Staphyloma of the Cornea, in its vesicular state.—*Vide page* 62.

Fig. 2. The same, at a more advanced period.

Fig. 3. Represents the Cornea after the removal of the Staphyloma, by means of an artificial opening.

Fig. 4. A strangulated eversion of the internal surface of the superior palpebræ.

PLATE III.

Fig. 1. State of the lower eyelid in the convalescent stage of purulent Ophthalmia.—*Vide page* 225.

Fig. 2. Eversion and paralysis of the lower eyelid.—*Vide page* 230.

N. B. For the drawings, from which the engravings have been made, I am indebted to the able pencil of my friend and former assistant, Mr. Paxton.

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Fig. 1.

Fig. 2.

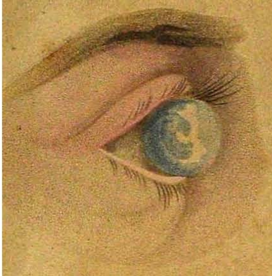

Fig. 3.

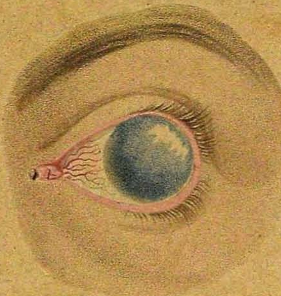

Fig. 4.

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Fig. 1.

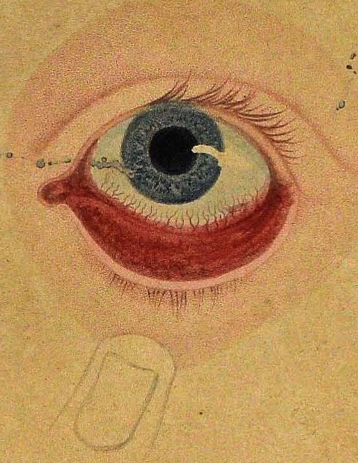
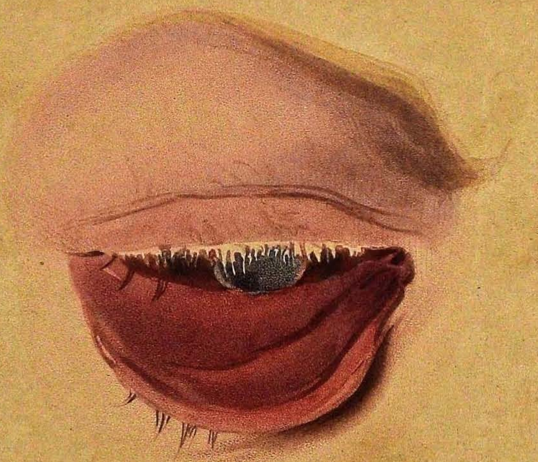


Fig. 2.



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